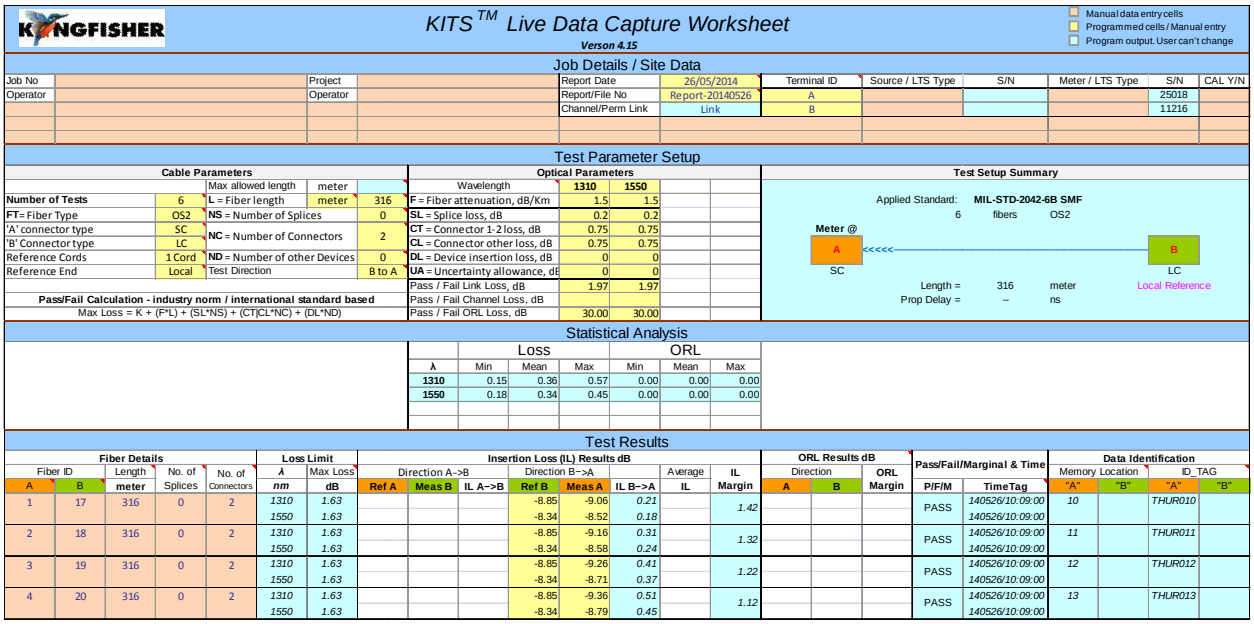
Fiber Optic Test Equipment Manufacturer

Kingfisher International

User Manual
140805 KITS 4.15

User Manual KITS™ 4.15



KINGFISHER

KITS™ Live Data Capture Worksheet

Verson 4.15

Manual data entry cells
Programmed cells / Manual entry
Program output. User can't change

Job Details / Site Data

Job No		Project		Report Date	26/05/2014	Terminal ID	Source / LTS Type	S/N	Meter / LTS Type	S/N	CAL Y/N
Operator		Operator		Report/File No	Report-20140526	A				25018	
				Channel/Perm Link	Link	B				11216	

Test Parameter Setup

Cable Parameters					Optical Parameters					Test Setup Summary
		Max allowed length	meter		Wavelength	1310	1550			
Number of Tests	6	L = Fiber length	meter	316	F = Fiber attenuation, dB/Km	1.5	1.5			Applied Standard: MIL-STD-2042-6B SMF
FT = Fiber Type	OS2	NS = Number of Splices		0	SL = Splice loss, dB	0.2	0.2			6 fibers OS2
'A' connector type	SC	NC = Number of Connectors		2	CT = Connector 1-2 loss, dB	0.75	0.75			Meter @ A <<<<< B
'B' Connector type	LC				CL = Connector other loss, dB	0.75	0.75			SC LC
Reference Cords	1 Cord	ND = Number of other Devices		0	DL = Device insertion loss, dB	0	0			Length = 316 meter Local Reference
Reference End	Local	Test Direction		B to A	UA = Uncertainty allowance, dB	0	0			Prop Delay = -- ns
					Pass / Fail Link Loss, dB	1.97	1.97			
Pass/Fail Calculation - industry norm / international standard based					Pass / Fail Channel Loss, dB					
Max Loss = K + (F*L) + (SL*NS) + (CT|CL*NC) + (DL*ND)					Pass / Fail ORL Loss, dB	30.00	30.00			

Statistical Analysis

	Loss			ORL		
λ	Min	Mean	Max	Min	Mean	Max
1310	0.15	0.36	0.57	0.00	0.00	0.00
1550	0.18	0.34	0.45	0.00	0.00	0.00

Test Results

Fiber Details					Loss Limit		Insertion Loss (IL) Results dB							ORL Results dB			Pass/Fail/Marginal & Time		Data Identification			
Fiber ID		Length	No. of Splices	No. of Connectors	λ	Max Loss	Direction A->B			Direction B->A			Average	IL Margin	Direction		ORL Margin			Memory Location		ID_TAG	
A	B	meter			nm	dB	Ref A	Meas B	IL A->B	Ref B	Meas A	IL B->A	IL		A	B		P/F/M	TimeTag	"A"	"B"	"A"	"B"
1	17	316	0	2	1310	1.63				-8.85	-9.06	0.21		1.42				PASS	140526/10:09:00	10		THUR010	
					1550	1.63				-8.34	-8.52	0.18							140526/10:09:00				
2	18	316	0	2	1310	1.63				-8.85	-9.16	0.31		1.32				PASS	140526/10:09:00	11		THUR011	
					1550	1.63				-8.34	-8.58	0.24							140526/10:09:00				
3	19	316	0	2	1310	1.63				-8.85	-9.26	0.41		1.22				PASS	140526/10:09:00	12		THUR012	
					1550	1.63				-8.34	-8.71	0.37							140526/10:09:00				
4	20	316	0	2	1310	1.63				-8.85	-9.36	0.51		1.12				PASS	140526/10:09:00	13		THUR013	
					1550	1.63				-8.34	-8.79	0.45							140526/10:09:00				

Copyright Kingfisher International Pty Ltd.

KITS is a registered Trade Mark.

1. PURPOSE **5**

2. OVERVIEW **5**

3. WHAT'S NEW IN THIS VERSION **5**

4. QUICK REFERENCE GUIDE **6**

4.1 KITS WORKSHEETS 6

4.1.1 Live Data sheet *6*

4.1.2 Loss Testing sheet *7*

4.1.3 Meter Reading sheet *7*

4.1.4 Data Logging sheet *8*

4.1.5 Memory Dump sheet *8*

4.2 KITS™ SAVE CSV 8

5. FONT CONVENTIONS USED IN THIS MANUAL **9**

6. COMPUTER & INSTRUMENT FIRMWARE REQUIREMENTS **9**

6.1 COMPUTER 9

6.2 INSTRUMENT 9

7. SOFTWARE INSTALLATION **10**

7.1 BEFORE INSTALLATION 10

7.2 SPECIAL REQUIREMENTS OFFICE 2003 10

7.3 SETUP.EXE 11

7.3.1 Where are the KITS™ files located? *12*

7.3.2 Regional Configuration *13*

7.4 INSTALLING OFFICE MUI FOR RUNNING KITS™ IN ANOTHER LANGUAGE 14

8. KITS TOP LEVEL MENU LOCATION **15**

9. STARTING KITS™ & CONNECTING AN INSTRUMENT **16**

10. LIVE DATA WORKSHEET - MENUS **18**

10.1 KINGFISHER MENU 18

10.1.1 Adding or removing a KITS™ Worksheet *18*

10.1.2 New Report *18*

10.1.3 Change Meter Port *19*

10.1.4 User Manual *19*

10.1.5 About KITS™ *19*

10.1.6 Kingfisher Web site *19*

10.2 CONNECT / DISCONNECT MENU 20

10.3 SETUP MENU 20

10.3.1 Pass/Fail Setup *20*

10.3.1.1 Definition: Pass / Fail / Marginal Result 21

10.3.2 Test Setup *21*

10.3.2.1 Local / Remote Referencing Definition 22

10.3.3 Terminal ID Names *23*

10.3.4 Set Meter Reference *23*

10.3.5 Set Autotest Wait Time *23*

10.3.6 Job Details / Site Data Form *24*

10.3.7 Pass / Fail Setup Form *24*

10.3.8 Test Summary Form *24*

10.3.9 Save as KITS Unlinked *25*

10.4 TEST DATA MENU 26

10.4.1 Unset/Set Secure Data Mode *26*

10.4.2 Save / Load / Merge csv File *28*

10.4.3 Memory Download *30*

10.5 CLEAR MENU 32

10.6 JUMP TO USER MANUAL 32

11. LIVE DATA – TYPICAL TEST CONFIGURATION **33**

12. LIVE DATA - TEST DATA ENTRY **38**

12.1.1 Manual Data Entry (only when Data Secure Mode is unset) - local referencing, one-way test. *38*

Copyright

12.1.2 One click entry - local referencing, one-way test. ... *41*
12.1.3 One click entry - local referencing, two-way test ... *42*
12.1.4 Secure data mode ... *44*
12.1.5 ORL Measurement ... *44*
12.1.5.1 AutoTest ORL measurement ... 44
12.1.5.2 Manual ORL measurement ... 45
13. LOSS TESTING WORKSHEET ... 46
14. METER READING WORKSHEET ... 47
15. DATA LOGGING WORKSHEET ... 49
15.1 AUTOMATIC DATA LOGGING ... 49
15.2 MANUAL DATA LOGGING ... 50
15.3 VIEWING DATA WHILST LOGGING ... 51
15.4 LOADING SAVED LOG FILES ... 52
15.5 PRINTING LOG FILES ... 53
16. METER DUMP WORKSHEET ... 54
17. EXTRACT MEMORY TO CSV ... 55
18. CUSTOMISATION ... 56
18.1 RENAMING WORKSHEETS ... 56
18.2 MODIFYING THE LIVE DATA & LOSS TESTING WORKSHEETS ... 56
18.2.1 Modification Rules ... *56*
18.3 PROTECTING A WORKSHEET DESIGN ... 57
18.4 DESIGNING A CUSTOMISED REPORT SHEET ... 57
18.4.1 XML Mapping Tips: ... *60*
19. TECHNICAL TIPS ... 61
19.1 RUNNING AN ADDITIONAL KITS™ WORKBOOKS ... 61
19.2 OPENING AN OLD FORMAT KITS™ WORKBOOK ... 61
APPENDIX A SUPPORT ... 62
A.1 RE-ENABLING THE KITS™ ADD-IN ... 62
APPENDIX B RS232 / USB DRIVER CONFIGURATION & INSTALLATION ... 63
B.1 RS232 ... 63
B.2 USB POWER ... 63
B.3 CHANGE METER PORT ... 63
B.4 USB KI7000 SERIES ... 64
B.5 USB KI2000 SERIES ... 64
APPENDIX C USE OF INTERNATIONAL AND OTHER STANDARDS ... 65
C.1 INTERNATIONAL STANDARDS ... 65
C.2 OTHER STANDARDS ... 66
APPENDIX D LICENSE & WARRANTY ... 69
D.1 END-USER-LICENSE AGREEMENT FOR KINGFISHER INTERNATIONAL SOFTWARE ... 69
D.2 SOFTWARE PRODUCT LICENSE ... 69
D.2.1 GRANT OF LICENSE. This EULA grants you the following rights: ... *69*
D.2.2 DESCRIPTION OF OTHER RIGHTS AND LIMITATIONS ... *70*
D.2.3 UPGRADES ... *70*
D.2.4 COPYRIGHT ... *71*
D.2.5 DUAL-MEDIA SOFTWARE ... *71*
D.3 WARRANTY ... 71

Copyright

Record of Issues

If you have any suggestions for improvement to this document, please contact us at Kingfisher International Pty Ltd.

30 Rocco Drive, Scoresby, Victoria, 3179, Australia
Tel: +61 3 9757 4100
Fax: +61 3 9757 4193
E-mail: sales@kingfisher.com.au
Web: www.kingfisherfiber.com.au

We hope you enjoy using our software

Issue No.	Issue Date.	Comments	Issue Author
1	2013	KITS 4.14	Brian Crook
2	August 2014	KITS upgrade to version 4.15	Tack Ng, Brian Crook, Ming Zhao

The contents of this publication are subject to change without notice. All efforts have been made to ensure the accuracy of this publication. Notwithstanding, Kingfisher International Limited does not assume responsibility for any errors nor for any consequences arising from any errors in this publication.

Copyright

1. PURPOSE

This User Manual describes the use of Kingfisher International's Test reporting Software (KITS™) for Loss Testing.

It is assumed that the user has basic knowledge of both fibre optical testing and Kingfisher instrument operation.

2. OVERVIEW

KITS™ is is an Excel based test and reporting program used for testing and reporting fiber optic power, attenuation, and integrated optical return loss.

Full-feature capability includes real time interactive data acquisition, data logging, a real time meter display, data file import / export, importing data from instrument memory, and manual data input.

Several International and National standards are bult into KITS™. The user can add additional standards if required.

KITS™ provides fully customisable cable acceptance reporting layouts.

3. WHAT'S NEW IN THIS VERSION

New in version V4.15

- Support for varied fibre lengths within the one cable.
- Secure data features.
- Memory location details included with meter download.
- Updated ISO/IEC 14763-3 insertion loss limits.
- Improved CSV file import menu.

- Test location address fields removed.
- Support for rlg files removed.

Copyright

4. QUICK REFERENCE GUIDE

This Section provides a brief summary of the worksheets features.

4.1 KITS Worksheets

The KITS program has 5 worksheets named:-

1. Live Data,
2. Loss Testing,
3. Meter Reading,
4. Data Logging and
5. Memory Dump.

Additional user designed worksheets can be added as required.

4.1.1 Live Data sheet

All loss testing data is entered into the 'Live Data' worksheet which is divided into 4 sections as shown in **Figure 1** below.

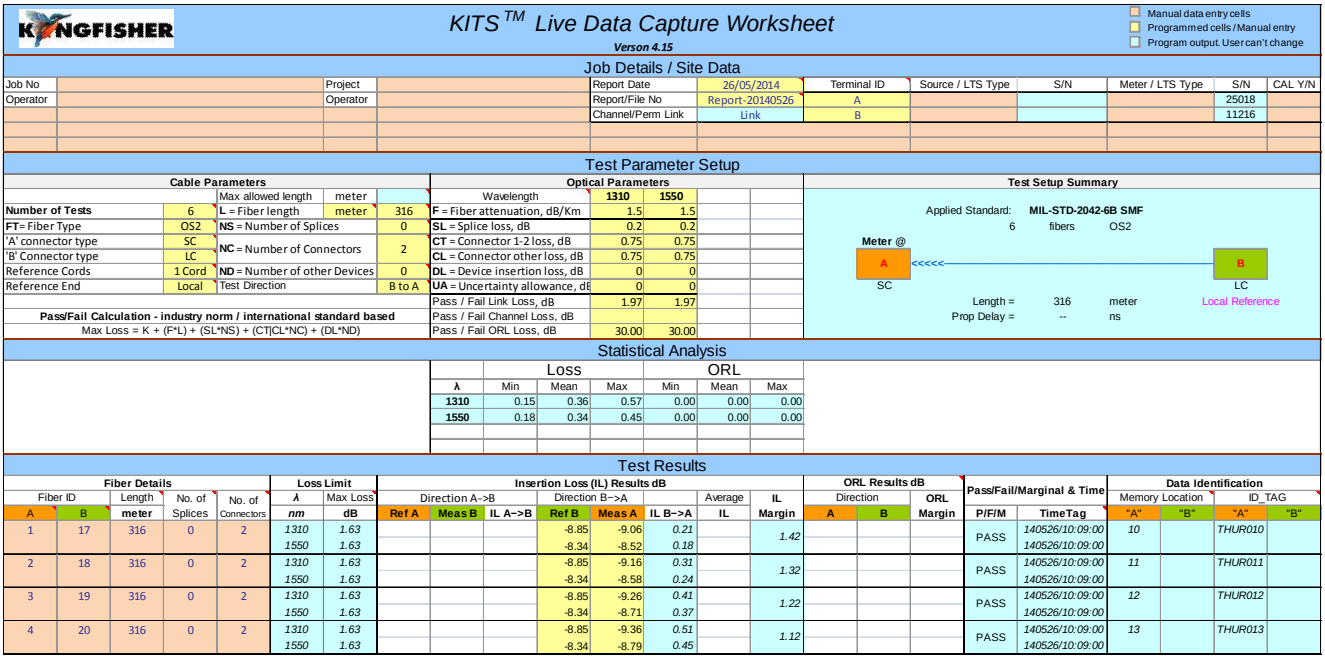
- The Live Data sheet can be configured for 1~4 wavelengths.

The Live Data sheet performs analysis.

- The Live Data sheet can be configured to provide an international, local or user defined standard compliant report.

Data can be entered into the Live Data sheet by :-

- manual entry **(only if Data Secure Mode is unset)**
- clicking with a mouse during live testing or
- by memory download direct from instrument
- Import from CSV file.



KINGFISHER — *KITS™ Live Data Capture Worksheet* — *Version 4.15*

Manual data entry cells / Programmed cells / Manual entry / Program output. User can't change

Job Details / Site Data

Job No		Project		Report Date	26/05/2014	Terminal ID	Source / LTS Type	S/N	Meter / LTS Type	S/N	CAL Y/N
Operator		Operator		Report/File No	Report-20140526	A				25018	
				Channel/Perm Link	Link	B				11216	

Test Parameter Setup

Cable Parameters					Optical Parameters	1310	1550
		Max allowed length	meter		Wavelength		
Number of Tests	6	L = Fiber length	meter	316	F = Fiber attenuation, dB/Km	1.5	1.5
FT= Fiber Type	OS2	NS = Number of Splices		0	SL = Splice loss, dB	0.2	0.2
'A' connector type	SC	NC = Number of Connectors		2	CT = Connector 1-2 loss, dB	0.75	0.75
'B' Connector type	LC				CL = Connector other loss, dB	0.75	0.75
Reference Cords	1 Cord	ND = Number of other Devices		0	DL = Device insertion loss, dB	0	0
Reference End	Local	Test Direction		B to A	UA = Uncertainty allowance, dB	0	0
					Pass / Fail Link Loss, dB	1.97	1.97
Pass/Fail Calculation - industry norm / international standard based					Pass / Fail Channel Loss, dB		
Max Loss = K + (F*L) + (SL*NS) + (CT|CL*NC) + (DL*ND)					Pass / Fail ORL Loss, dB	30.00	30.00

Test Setup Summary: Applied Standard: MIL-STD-2042-6B SMF; 6 fibers OS2; Meter @ A (SC) <<<<< B (LC); Length = 316 meter; Prop Delay = -- ns; Local Reference

Statistical Analysis

	Loss			ORL		
λ	Min	Mean	Max	Min	Mean	Max
1310	0.15	0.36	0.57	0.00	0.00	0.00
1550	0.18	0.34	0.45	0.00	0.00	0.00

Test Results

Fiber Details					Loss Limit		Insertion Loss (IL) Results dB							ORL Results dB			Pass/Fail/Marginal & Time		Data Identification			
Fiber ID		Length	No. of	No. of	λ	Max Loss	Direction A->B			Direction B->A			Average	IL	Direction		ORL		Memory Location		ID_TAG	
A	B	meter	Splices	Connectors	nm	dB	Ref A	Meas B	IL A->B	Ref B	Meas A	IL B->A	IL	Margin	A	B	Margin	P/F/M	TimeTag	"A"	"B"	"A"	"B"
1	17	316	0	2	1310	1.63				-8.85	-9.06	0.21		1.42				PASS	140526/10:09:00	10		THUR010	
					1550	1.63				-8.34	-8.52	0.18							140526/10:09:00				
2	18	316	0	2	1310	1.63				-8.85	-9.16	0.31		1.32				PASS	140526/10:09:00	11		THUR011	
					1550	1.63				-8.34	-8.58	0.24							140526/10:09:00				
3	19	316	0	2	1310	1.63				-8.85	-9.26	0.41		1.22				PASS	140526/10:09:00	12		THUR012	
					1550	1.63				-8.34	-8.71	0.37							140526/10:09:00				
4	20	316	0	2	1310	1.63				-8.85	-9.36	0.51		1.12				PASS	140526/10:09:00	13		THUR013	
					1550	1.63				-8.34	-8.79	0.45							140526/10:09:00				

Figure 1, Typical 'Live Data'

Copyright

4.1.2 Loss Testing sheet

The 'Loss Testing' worksheet is used when the test data is required to be presented in an alternate format to that of the 'Live Data' worksheet.

- The Loss testing worksheet is receive only.
- All data is imported from the 'Live Data' worksheet.
- The Loss testing worksheet can be configured to display one or two wavelengths.

Loss Testing Report
KITS Verson 4.15

Job No:	NQ-94798	Project:		Report Date:	27/03/2014
Operator:	Sedgman	Operator:	Brian	Report/File No:	Report-20140327
				Channel/Perm Link:	Link

Instruments	Terminal ID	Source / LTS Type	S/N	Meter / LTS Type	S/N	CAL Y/N
	Patch Panel SC FE	KI2722		KI2600	25018	Y

Pass / Fail Value = K + (F*L) + (SL*NS) + (CT|CL*NC*) + (DL*ND)

	1st Wavelength, nm	1310	2nd Wavelength, nm	1550	Pass/ Fail/ Marginal	Min. margin (db)
F	Fibre attenuation per Km, dB	1.50	Fibre attenuation per Km, dB	1.50		
SL	Splice loss, dB	0.20	Splice loss, dB	0.20		
CT	Connector loss 1-2, dB	0.75	Connector loss 1-2, dB	0.75		
CL	Connector loss other, dB	0.75	Connector loss other, dB	0.75		
DL	Device insertion loss, dB	0.00	Device insertion loss, dB	0.00		
UA	Uncertainty allowance, dB	0.00	Uncertainty allowance, dB	0.00		
	Pass / Fail Link Loss, dB	1.80	Pass / Fail Link Loss, dB	1.80		
	Pass / Fail ORL Loss, dB	30.00	Pass / Fail ORL Loss, dB	30.00		
	Minimum Average Loss (dB)	-0.18	Minimum Average Loss (dB)	-0.10		
	Maximum Average Loss (dB)	2.17	Maximum Average Loss (dB)	2.28		

Fibre ID "A"	Fibre ID "B"	Length meter	No. of Splices	No. of Conn's	Memory Location A	Memory Location B	ID_TAG A	ID_TAG B	Max Loss	Ref level dBm A	Ref level dBm B	2nd value dBm A	2nd value dBm B	Link loss dB A to B	Link loss dB B to A	Link loss dB Average	ORL loss dB A	ORL loss dB B	Max Loss	Ref level dBm A	Ref level dBm B	2nd value dBm A	2nd value dBm B	Link loss dB A to B	Link loss dB B to A	Link loss dB Average	ORL loss dB A	ORL loss dB B		
1A	2A	67	1	2	0	4	0	AGC00	1.80	-0.71	-0.71	-0.87	-2.56	1.85	0.16	1.09			1.80	-0.38	-0.38	-0.64	-2.36	1.98	0.26	1.20			PASS	0.60
2A	3A	67	1	2	0	5	0	AGC00	1.80	-0.71	-0.71	-0.89	-1.04	0.33	0.18	0.26			1.80	-0.38	-0.38	-0.67	-0.85	0.47	0.29	0.38			PASS	1.42
3A	4A	67	1	2	0	6	0	AGC00	1.80	-0.71	-0.71	-0.51	-0.54	-0.17	-0.20	-0.18			1.80	-0.38	-0.38	-0.23	-0.32	-0.06	-0.15	-0.10			PASS	1.91
4A	5A	67	1	2	0	7	0	AGC00	1.80	-0.71	-0.71	-0.48	-4.41	3.70	-0.23	2.17			1.80	-0.38	-0.38	-0.24	-4.20	3.82	-0.14	2.28			FAIL	

Figure 2, Loss Testing' sheet

4.1.3 Meter Reading sheet

Typically used in a classroom situation or where a large display size is required.

Basic meter functions available are:-

- Change wavelength
- Set reference
- Absolute or relative mode – dBm/dBr
- Hold
- ORL

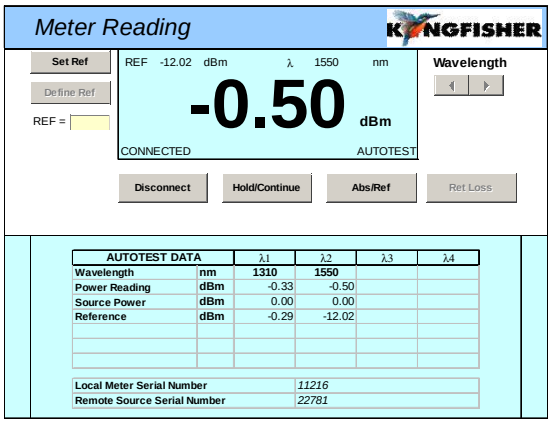


Figure 3, Meter Reading sheet

Copyright

4.1.4 Data Logging sheet

Data logging is used when it is required to monitor power level over a time period.

Typical applications include source stability, environmental induced changes and test jig failure timing.

Required logging parameters are:-

- Wavelength
- Size of log – number of samples
- Sample interval
- Absolute or relative mode – dBm/dBr

Figure 4, Data logging

4.1.5 Memory Dump sheet

This is a straightforward procedure that is especially useful when an instruments memory contents are not known.

A memory dump may be initiated either from within the KITS™ workbook, via the separate 'Save Csv' program or with KI2000 series instruments via USB download.

All data in an instrument's Memory is extracted to a simple Excel worksheet. No analysis is performed.

The data layout depends upon the instrument series.

Data downloaded from S/N 25018, Date/Time 140327/01:11:22

Fibre	Date	Time	Type	ID Tag	Remote S/N	WL	Power	Ref	Nom
1	2/07/13	12:02	2WIAuto	TAGA001	24043	1310 nm	-3.10	-3.59	-3.00
1	2/07/13	12:02	2WIAuto	TAGA001	24043	1550 nm	-2.94	-2.98	-3.00
2	9/07/13	8:13	2WIAuto	TAGA002	24043	1310 nm	-2.89	-3.27	-3.00
2	9/07/13	8:13	2WIAuto	TAGA002	24043	1550 nm	-2.97	-3.08	-3.00

Figure 5, Typical Memory dump

4.2 KITS™ Save CSV

This program is independent of the KITS™ Wizard software (an Excel Addin) and is similar to the Memory Dump above. It is typically used when the host computer does not use Microsoft Office.

All data in an instruments Memory is extracted to a CSV spreadsheet and includes a checksum. No analysis is performed.

Save csv output from KI Meter. SN: 11216 Time in 24h format. Wavelengths in nm. Optical Power values in dBm.

Mem	Date	Time	ID_Tag	RemSN	Length	WI1	Pwr1	Ref1	Orl1	RemPwr1	RemRef1	RemOrl1	WI2	Pwr2	Ref2	Orl2
1				24919		1310	-0.34	-99.99	1.44	-99.99	-99.99	-99.99	1310	-0.43	-99.99	99.98
2				24919		1310	-0.1	-0.1					1550	-0.25	-0.25	
3				24919		1310	-0.09	-0.1					1550	-0.25	-0.25	
4				24919		1310	-8.33	-0.1					1550	-19.31	-0.25	

{xcheck: 00a1a199e0}

Figure 6, Memory extract via 'Save Csv'

Copyright

5. FONT CONVENTIONS USED IN THIS MANUAL

The bold italic font, like ***[Kingfisher] / [Data Logging]***, is used for a command (or a command sequence) in Windows menu system, whether it is for Windows, Office, or KITS™.

The text in square brackets, such as [AUTOTEST], is an operation on the test instrument.

6. COMPUTER & INSTRUMENT FIRMWARE REQUIREMENTS

6.1 Computer

Full install:-

- Microsoft Windows 32 / 64 bit: 8 / 7 / Vista / XP. XP requires dotnet 3.5
- Microsoft Office 2013 / 2010 / 2007 / 2003. Office 2003** usually requires additional configuration.
    - ** For Office 2003 only: If not already installed, Microsoft Update KB907417, which will be installed by KITS.

KITS™ support for any non-English language Windows environments is as follows:-

- English language installations of Microsoft Office require a relevant language Microsoft Office MUI (Multilingual User Interface) to run in another language.
- Non-English language installations of Microsoft Office require an English language Microsoft Office MUI.

Compact install:-

This alternative KITS™ CSV "one button" memory download can be installed on Windows computers without MS Office. (also installs with the full version).

- Microsoft Windows 8 / 7/ Vista / XP with dotnet 3.5

6.2 Instrument

KI2000 meter or loss test set (LTS):

Firmware V0.27 and above. Earlier firmware versions may provide reduced functionality.

The firmware version is displayed on the instrument LCD during turn on. Firmware is field upgradeable. Details on how to upgrade the Firmware are on our web site.

http://www.kingfisherfiber.com/Fiber-Optic-Test-Equipment/KI2000-Firmware/Firmware.htm

KI 7000 or loss test set (LTS):

Firmware version 5.00 or later. Earlier firmware versions may provide reduced functionality.

The firmware version is displayed on the instrument LCD during turn on. Firmware upgrades must be performed at a service centre.

Copyright

7. SOFTWARE INSTALLATION

To install KITS™, the user must log into the computer using a profile with local administrator rights.

The latest release of KITS™ is available for download on our web site http://www.kingfisherfiber.com

7.1 Before Installation

If updating from a previous version, you may like to back up existing data before proceeding.

Uninstall older versions prior to installation.

Before installation, ensure that Microsoft Office is installed.

7.2 Special requirements Office 2003

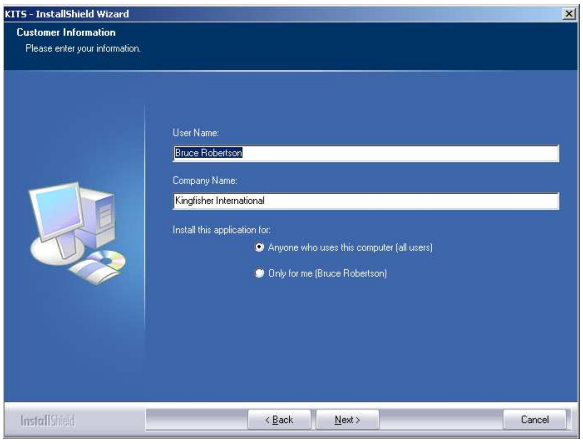
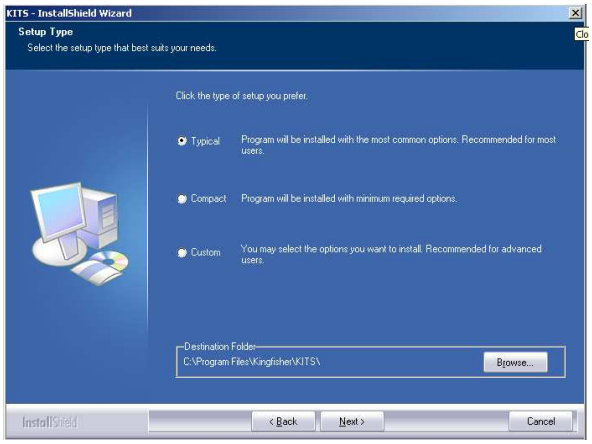
Some installations of Microsoft Office 2003 may require manual configuration to enable Office to use Microsoft .NET Framework. (This happens if Office was installed before Windows .NET).

The installation program will detect if this is required and advise of the requirement.

Step	Procedure
1	Start Control Panel.
2	Select ***[Add/Remove Programs]***
3	Select ***[Microsoft Office]*** and then select ***[Change]***
4	Select ***[Add or Remove Features]*** , then select ***[Next]*** (or Continue) button
5	Select Advanced customization of applications and Next
6	Under Microsoft Office / Microsoft Office Excel, enable .NET Programmability Support
7	Under Office Tools, enable Microsoft Forms 2.0 .NET Programmability Support

Copyright

7.3 Setup.Exe

Step	Procedure
1	Run the KITS4.15.exe file.
2	Select ***[Next]***
3	Enter Customer information.  **Figure 7,**
4	Select ***[Next]***
5	Choose type of installation. a./ ***[Typical]***. b./ Compact c./ Custom  **Figure 8,** In this instruction 'Typical' is assumed.
6	Select ***[Next]***
7	Check particulars selected
8	Select ***[Next]***
9	KITS program is installed
10	Select ***[Finish]***.

If setup is run again, the user will be prompted to perform a repair, modify (custom) or uninstall.

Copyright

7.3.1 Where are the KITS™ files located?

Specification spreadsheets:

The default directory for the Master layout Spreadsheet, standards specification excel files, 'Loss Test Standards.xls' and 'User-LossTest-Standards.xls' depends upon which version of the Windows operating system is being used.

Typically this will be either.

c:\Documents and Settings\All Users\Application Data\Kingfisher\KITS4.

or

c:\Program Data\Kingfisher\KITS4

For some users this may be a hidden directory.

Application and configuration files:

The default directory for the application and configuration files is:-

C:\Program Files\Kingfisher\KITS:-

Note: Due to security and administration requirements, Microsoft Windows often places application and configuration files in different locations depending on which version of Windows you are using and how it has been configured.

If the KITS™ files are not in the default directory then:-

- To locate the KITS™ application files, locate the application shortcut in the Start Menu, right click it, click ***[Properties]***, and then click ***[Find Target]***.
- If you have lost the application shortcuts, try looking for either 'KITS' or 'Kingfisher' in the default Program Files directory on your computer.

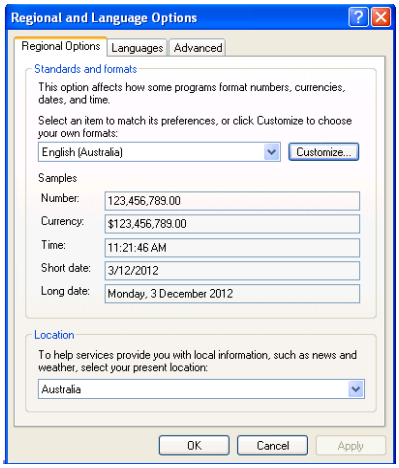
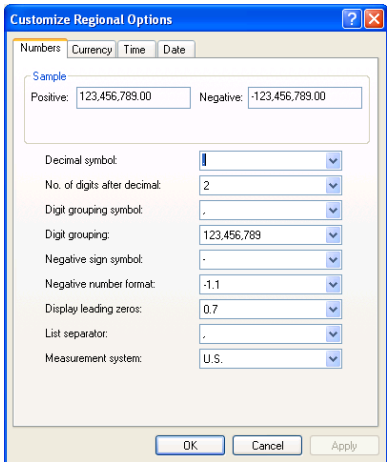
KI2000 Device Driver Files:

Further information relating to the KITS™ RS232 and USB driver configuration files is contained in **Appendix B**
RS232 / USB Driver configuration & Installation .

Copyright

7.3.2 Regional Configuration

Number configuration and distance units are set in the Windows, Regional and Language Options dialogue box.

Step	Procedure
1	Start Control Panel.
2	Select ***[Regional and Language Options]***  **Figure 9,**
3	Select ***[Customize]***  **Figure 10,**
4	Enter required number moderators and distance units as required.
5	Select ***[OK]***
6	Select ***[OK]***
7	Close Control Panel

Copyright

7.4 Installing Office MUI for Running KITS™ in Another Language

If you use non-English Windows, or choose another language from "***Regional and Language Options"***, you may receive an error message "Old format or invalid library …" when you start KITS™.

There are two scenarios which cause this message:-

1. English Windows. Non English Office.
2. Non English Windows.

There are various possible ways to fix this:

1. For English Language Installations of Windows / Office: Change the Windows operational language back to English:
    1. Go to ***[Start] / [settings] / [Control Panel] / [Regional and Language Options] / [Regional Options]*** tab.
    2. Set both the "standards and formats" drop down to a version of English.
    3. Then select the Languages tab, and set all "input language" details to a version of English. "Standards and formats" can be customised.
2. For non English installations of Office: The English Language Office MUI (Multilingual User Interface) must be installed. The Microsoft MUI is a separate Microsoft product that allows users to use Office in other languages.
3. Leave the computer in the non-English language, but install the relevant Microsoft Office English MUI.

Copyright

8. KITS TOP LEVEL MENU LOCATION

Prior to Microsoft Office 2007 the KITS menus appeared in a row below the main Office Excel Menus. Refer **Figure 11** below.

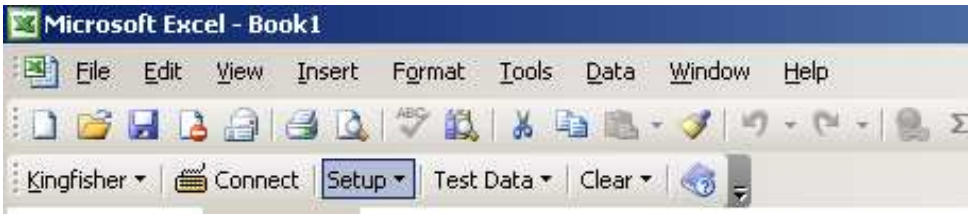


Figure 11, Original KITS Menu location

Starting with Office 2007 and above, Microsoft changed the rules.

With Office 2007 and above, the KITS menus are accessed via an 'Add-Ins' menu item added to the main Office Excel Menus. Once the ***[Add Ins]*** menu is clicked, the KITS menus become visible. Refer **Figure 12** below.

Figure 12, New KITS Menu location

These Menus are discussed in detail in elsewhere within this manual.

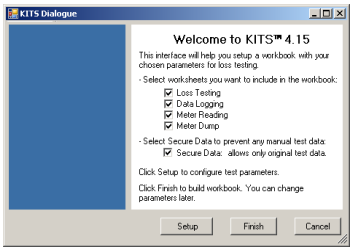
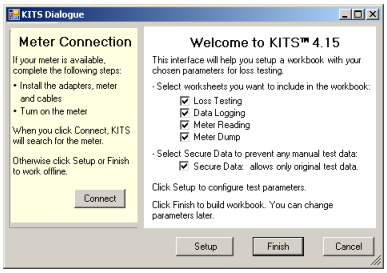
Copyright

9. STARTING KITS™ & CONNECTING AN INSTRUMENT

The software can be started with or without an instrument connected.

The KITS™ start up program permits test configuration before or after the worksheet is fully opened.

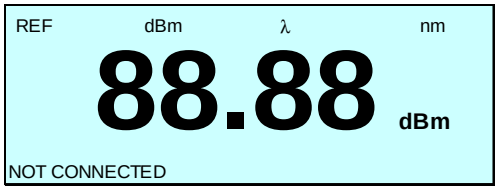
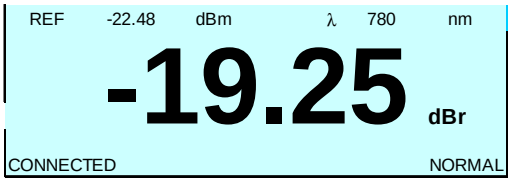
The procedure below assumes test circuit configuration is to be after the KITS™ worksheets are opened.

Step	Starting KITS™ & connecting an instrument
1	On your desktop, double click on ***[KITS Wizard]*** icon. Alternatively navigate via the Windows Start menu. e.g. ***[Start] -> [all Programs] -> [Kingfisher Kits] -> [Kits Wizard]***
2	Excel will start, with a screen "Welcome to KITS 4.15 "
3	Select ***[Finish]*** (Please Wait)  **Figure 13, 1st Welcolme screen** Optionally disable some worksheets options and/or 'Secure Data' mode.
4	If no instrument is connected, the Welcolme screen will redisplay showing no meter connected. Select ***[Finish]*** (Please Wait)  **Figure 14, 2nd Welcolme screen**
5	The KITS™ splash screen will display. **Figure 15, Splash Screen**

KITS Dialogue
Welcome to KITS™ 4.15
This interface will help you setup a workbook with your chosen parameters for loss testing.
- Select worksheets you want to include in the workbook:
Loss Testing
Data Logging
Meter Reading
Meter Dump
- Select Secure Data to prevent any manual test data:
Secure Data: allows only original test data.
Click Setup to configure test parameters.
Click Finish to build workbook. You can change parameters later.
Setup
Finish
Cancel

KITS Dialogue
Meter Connection
If your meter is available, complete the following steps:
• Install the adapters, meter and cables
• Turn on the meter
When you click Connect, KITS will search for the meter.
Otherwise click Setup or Finish to work offline.
Connect
Welcome to KITS™ 4.15
This interface will help you setup a workbook with your chosen parameters for loss testing.
- Select worksheets you want to include in the workbook:
Loss Testing
Data Logging
Meter Reading
Meter Dump
- Select Secure Data to prevent any manual test data:
Secure Data: allows only original test data.
Click Setup to configure test parameters.
Click Finish to build workbook. You can change parameters later.
Setup
Finish
Cancel

Copyright

Step	Starting KITS™ & connecting an instrument
6	KITS will normally open at the Meter Reading sheet. • With no instrument connected, the screen will display 88.88 dBm and NOT CONNECTED. • With an instrument connected, the screen will display the recive power level and CONNECTED.   **Figure 16, Meter reading start up screen**

If the KITS™ program does not load, refer to Section **7** on page **10** above.

If the instrument does not connect, firstly check that the instrument is turned On and that the computer interface cord is connected. If still unable to connect, refer to **Appendix B RS232 / USB Driver configuration & Installation** on page **63** below.

Copyright

10. LIVE DATA WORKSHEET - MENUS

All loss testing data is entered into the live data sheet. Where an alternative report layout is required, this data can also be populated into the 'Loss Testing' worksheet or into a user designed report worksheet

The Live Data sheet has 6 pull down menus.

1) Kingfisher
2) Connect/Disconnect
3) Setup
4) Test Data
5) Clear
6) Jump to the User Manual

10.1 Kingfisher Menu

The Kingfisher sub menus are used to:-

- Open closed worksheets
- Create a new user designed worksheet
- Acess the inbuilt user manual
- Check on the installed KITS™ build version
- Link to the Kingfisher international web site.

10.1.1 Adding or removing a KITS™ Worksheet

Depending upon the application, not all of KITS'™ worksheets may be required.

A worksheet can be removed from the KITS™ workbook using standard Excel commands or not included in initial setup.

- A standard KITS™ worksheet can be restored to the workbook at any time. To do so, select ***[Kingfisher] -> [<Sheet name>]***.

Note: Because the Loss Testing sheet relies on the Live Data sheet for test data, it does not function properly without the Live Data sheet.

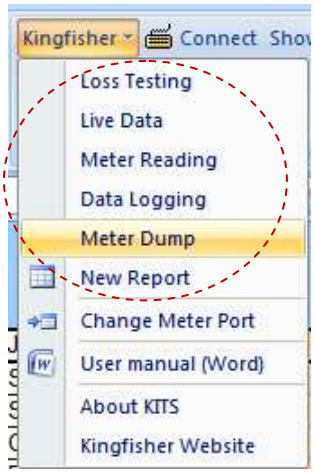


Figure 17, KITS worksheet restore

10.1.2 New Report

Used to design a custom report layout. This function is covered in Section 18.4

Copyright

10.1.3 Change Meter Port

Users normally do not need to consider the meter port as KITS™ finds the port automatically on connection. The sequence is that KITS™ searches for an available USB port first, and then search for a RS232 port.

The ***Change Meter Port*** menu item is useful if multiple KITS™ applications are running in the same computer (e.g. in a laboratory situation). In this situation, the user may need to specify the COM port manually for a particular instance of KITS™.

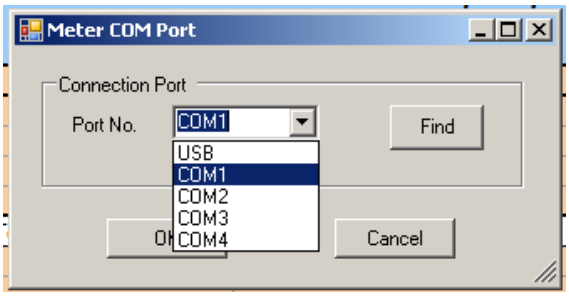


Figure 18, Select meter port

10.1.4 User Manual

This User Manual is also conatained within the KITS™ program as a Microsoft word document.

To acess the User Manual from within KITS™ navigate to:-

[Kingfisher] -> [User manual (Word)]

Alternativel the User Manual can be:-

1. located on your computer as detailed in 7.3.1 above.
2. downloaded from the Kingfisher International web site.
3. Accessed via the Main Menu symbol which is located just to the right of the [Clear] Menu.

10.1.5 About KITS™

Displays the current KITS™ version number and release date.

This information is also displayed when the KITS™ program is loaded.

Figure 19, KITS build information

10.1.6 Kingfisher Web site

Links to the Kingfisher International web site.

Copyright

10.2 Connect / Disconnect Menu

Connects or disconnects the instrument to KITS™.

10.3 Setup Menu

The Setup sub-menus are used to configure the Live Data worksheet for the required test paramaters. The sub-menu is divided into 4 groups as detailed below:-

a) Pass/Fail Setup, Test Setup & Terminal Id Names
b) Set Meter Reference & Set Autotest Wait Time
c) Hide Job Details, Hide Pass/Fail Setup & Hide Test Summary
d) Save as KITS Unlinked

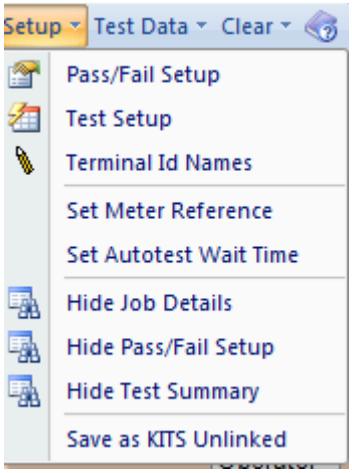


Figure 20, Live Data sheet –Setup sub-menu

By default, all 4 Sections of the Live Data worksheet are shown.

10.3.1 Pass/Fail Setup

This Submenu is usually configured first. It used to configure the workbook for:-

- Standard selection.
  - If a local or international standard is selected, then the various pass/fail parameters defined in the standards will be 'greyed out' to prevent alteration.
- Cable build details such as connector type, length, fibre count, number of splices etc.
- The number of test cords used in referencing the test instruments is also set here.
- Measurement uncertainty.
- Pass/ fail/ marginal result based upon worst case or two-way average loss.

Copyright

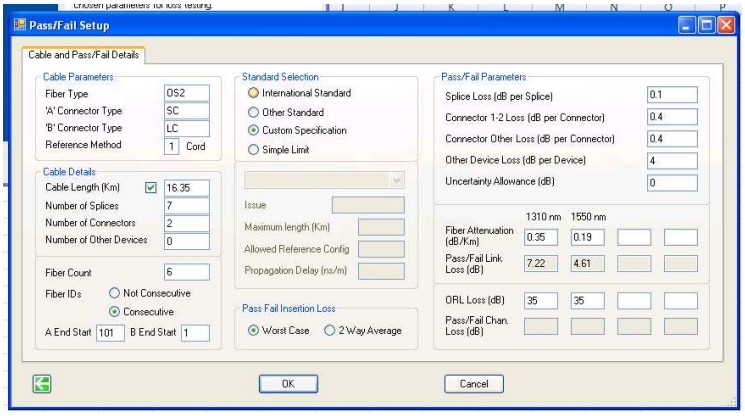


Figure 21, Pass / Fail Setup sub-menu

Note: Some standards restrict and or specify the allowable test cord referencing method. KITS will warn regarding this if necessary.

10.3.1.1 Definition: Pass / Fail / Marginal Result

The ISO & IEC standard organisations define the following.

Pass Result
measured value which meets the specified requirement and where the absolute value of the difference between the measured value and the specified requirement is greater than the stated measurement uncertainty. *Provided any apparent gain does not exceed the measurement uncertainty."*

Fail Result
Measured value which fails to meet the specified requirement and where the absolute value of the difference between the measured value and the specified requirement is greater than the stated measurement uncertainty.

Marginal Result
Measured value which differs from the specified requirement, by an amount not exceeding the stated measurement uncertainty.

10.3.2 Test Setup

This Submenu is usually configured after the 'Pass/Fail' sub-menu. It is used to configure the workbook for:-

- Test direction – one way, two way with a source and meter or two way using a two way LTS.
- ORL measurement included or not.
- DUT 'end' at which the Power Meter is connected.
- Type of referencing used – Local or Remote.
- Wavelengths to be tested – maximum of 4.

Copyright

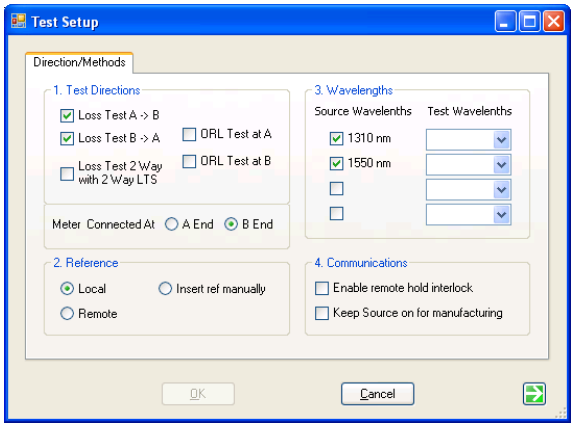


Figure 22, Test Setup sub-menu

Note: Whilst the 'Test Setup' and the 'Pass/Fail Setup' sub-menus can be configured in any order, it is recommended that when testing to a Standard, that the 'Pass/Fail Setup' sub-menu be configured first to minimise any interaction between them.

e.g. The standard may specify testing at two wavelengths, however the user may only be testing at one wavelength.

10.3.2.1 Local / Remote Referencing Definition

Whilst the terms 'Local' and 'Remote' referencing are used internationally, there is often some confusion.

Local:

- A Local Reference is performed when one power meter is used to measure both the Reference Level and the far end measurement.
- The two instruments that will be used to measure the DUT loss are together when referenced.
- Local Reference is commonly used in a situation where both ends of a system can be accessed readily by the one meter (for instance loop-back testing, or bench testing).
- With a Local Reference the meter can be configured to read the loss directly in dBr.

Remote:

- A Remote Reference is usually performed on a "long" link where it is inconvenient or impractical to use one power meter to measure the power at both the ends of the link.
- In a Remote Reference two power meters are used. One power meter is used to measure the Reference Level (e.g. the light source output power), and the other meter is used to measure the received level at the other end of the link.
- With a Remote Reference, a calculation must be made to determine the loss.

Copyright

10.3.3 Terminal ID Names

This sub-menu is used to specify the names of the two ends to be tested:-

- the A & B end test location names e.g. Bamaga
- the number of characters to be used for abbreviation.
  e.g. 4 => BAMA, 3 => BAM

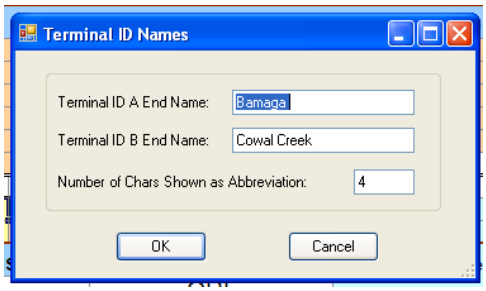


Figure 23, Terminal Identification (ID) sub-menu

10.3.4 Set Meter Reference

The ***Set Meter Reference*** sub-menu provides a convenient form to either:-

- Set the Reference Value, or
- Define the Reference Value.

The 'Set Meter Reference' popup is only available when an instrument is connected.

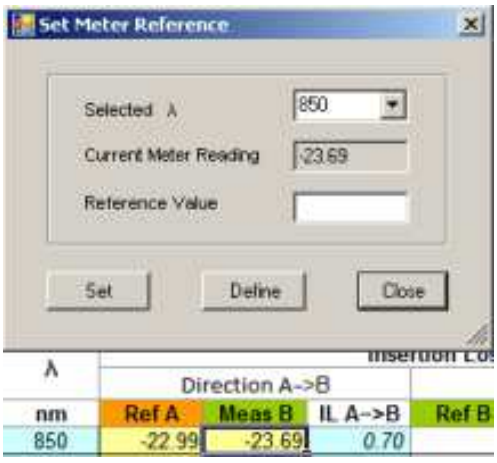


Figure 24, Set Meter Reference

The meter reference may also be set via the Meter Reading Worksheet. Refer Section **14** on page **47** below.

10.3.5 Set Autotest Wait Time

The ***Set Autotest Wait Time*** sub-menu allows the user to choose the time interval to receive update of Autotest readings. Default is 10 seconds

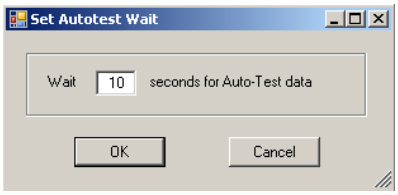


Figure 25, Autotest wait time

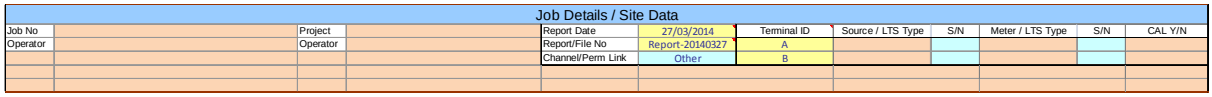
Copyright

10.3.6 Job Details / Site Data Form

Project specific data is entered here.

The form can be toggled On & Off.

- On by Default.



Job Details / Site Data											
Job No		Project		Report Date	27/03/2014	Terminal ID	Source / LTS Type	S/N	Meter / LTS Type	S/N	CAL Y/N
Operator		Operator		Report/File No	Report-20140327	A					
				Channel/Perm Link	Other	B					

Figure 26, Job Details / Site Data Form

In the current implementation, cells with a header such as 'Job No', 'Operator', etc and any data in their associated brown cell will be automatically copied to the 'Loss Testing Worksheet' All other brown cells are left to the user.

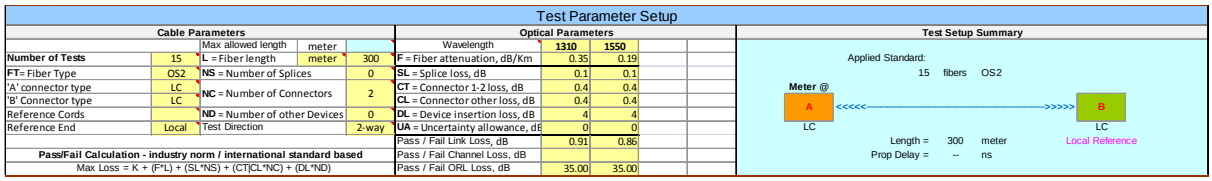
10.3.7 Pass / Fail Setup Form

This form titled 'Test Parameter Setup' shows the cable & optical test parameters and a test configuration diagram.

The terminal identification (ID) name boxes are coloured orange or green when an instrument is connected, and grey when there is no connection.

The form can be toggled On & Off.

- On by default.



Test Parameter Setup									
Cable Parameters				**Optical Parameters**				**Test Setup Summary**	
		Max allowed length	meter	Wavelength	1310	1550			
Number of Tests	15	L = Fiber length	meter 300	F = Fiber attenuation, dB/Km	0.35	0.19			
FT= Fiber Type	OS2	NS = Number of Splices	0	SL = Splice loss, dB	0.1	0.1			
'A' connector type	LC	NC = Number of Connectors	2	CT = Connector 1-2 loss, dB	0.4	0.4			
'B' Connector type	LC			CL = Connector other loss, dB	0.4	0.4			
Reference Cords		ND = Number of other Devices	0	DL = Device insertion loss, dB	4	4			
Reference End	Local	Test Direction	2-way	UA = Uncertainty allowance, dB	0	0			
				Pass / Fail Link Loss, dB	0.91	0.86			
Pass/Fail Calculation - industry norm / international standard based				Pass / Fail Channel Loss, dB					
Max Loss = K + (F*L) + (SL*NS) + (CT|CL*NC) + (DL*ND)				Pass / Fail ORL Loss, dB	35.00	35.00			

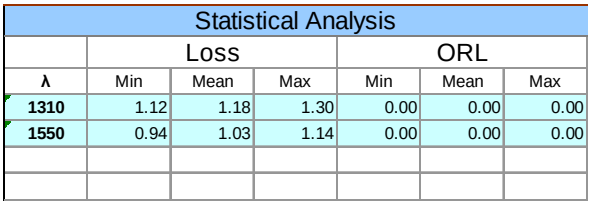
Figure 27, Cable & Optical test parameters

10.3.8 Test Summary Form

Provides test statistical analysis.

The form can be toggled On & Off.

- On by default.



Statistical Analysis						
	Loss			ORL		
λ	Min	Mean	Max	Min	Mean	Max
1310	1.12	1.18	1.30	0.00	0.00	0.00
1550	0.94	1.03	1.14	0.00	0.00	0.00

Figure 28, Test Statistics & Configuration drawing

The statistical analysis table is filled out automatically when testing under Autotest.

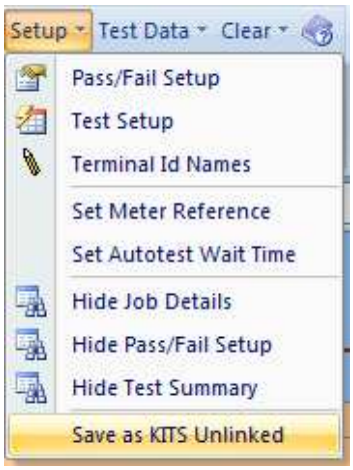
For Manual data entry, the statistical data is calculated after the file has been saved, closed and is subsequently opened.

Copyright

10.3.9 Save as KITS Unlinked

Normally when a KITS™ workbook is opened, it will automatically start the KITS™ software. When required, the workbook can be Unlinked from the KITS™ software.

Once a KITS™ workbook is Unlinked, the file will open in Excel as per a normal workbook. Once performed, the action CANNOT be undone.

Step	Unlink KITS™ workbook
1	Open the workbook to be Unlinked • Ensure workbook display layout is as required. • Once Unlinked, the action CANNOT be undone
2	Select ***[Setup] -> [Save as KITS Unlinked]***  **Figure 29, Workbook linkage to KITS™**

Copyright

10.4 Test Data Menu

This sub-menu is used to to manage save and load of the test data. There are 4 options, which are divided into 3 groups.

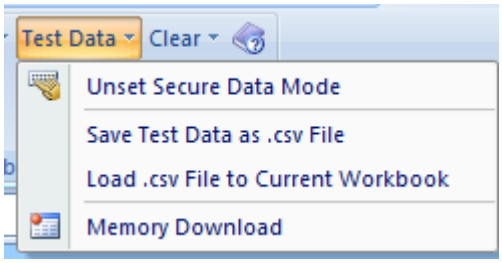


Figure 30, Test Data sub-menu

10.4.1 Unset/Set Secure Data Mode

Secure Data Mode is set as the default when the KITS™ workbook is installed.

Secure Data Mode is used to protect the worksheet against unauthorised or accidental manual data modification.

When set, the wording "Data Is Secure" will be shown on the KITS worksheet in pink. Refer **Figure 31** below. In this mode, manual data entry is not allowed.

Only data entered:-

- via clicking of the mouse during live testing,
- memory download or
- file import onto the worksheet is permitted.

Test Results (Data Is Secure)

No. of connectors	Loss Limit λ nm	Loss Limit Max Loss dB	Insertion Loss (IL) Results dB: Direction A->B Ref A	Direction A->B Meas B	Direction A->B IL A->B	Direction B->A Ref B	Direction B->A Meas A	Direction B->A IL B->A	Average IL	IL Margin	ORL Results dB: Direction A	Direction B	ORL Margin
2	1310	0.91											
	1550	0.86											
2	1310	0.91											
	1550	0.86											

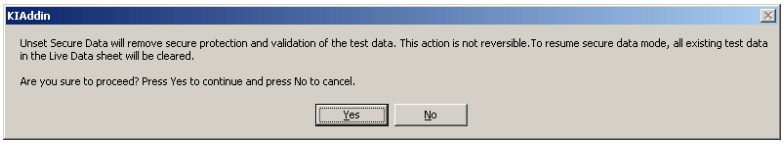
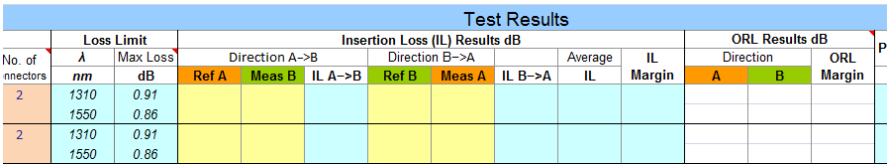
Figure 31, Secure Data Mode worksheet

Important: When KITS is in Secure Data model, there is a meter/source serial number control which does not allow different meters for the same Live Data sheet.

If manual data entry is required, the Secure Data mode can be disabled via the Unset command as detailed below.

Step	Unset Secure Data Mode
1	Select ***[Test Data]*** -> ***[Unset Secure Data Mode].*** **Figure 32, Unset Secure data**

Copyright

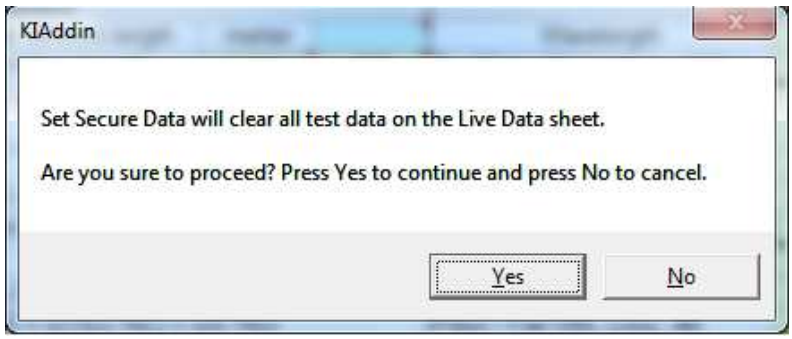
Step	Unset Secure Data Mode
2	A pop-up screen will warn that this action is not reversible. All existing worksheet test data will be erased. Select [Yes] to proceed or [No] to cancel.  **Figure 33, Confirm Unset Secure Data mode**
3	 **Figure 34, Worksheet with Data Secure Mode unset**

KIAddin
Unset Secure Data will remove secure protection and validation of the test data. This action is not reversible.To resume secure data mode, all existing test data in the Live Data sheet will be cleared.
Are you sure to proceed? Press Yes to continue and press No to cancel.
Yes
No

To Set Secure Data Mode:-

Proceeed as per above. Any existing test data will be deleted.

A pop-up screen will warn that all existing worksheet test data will be cleared.



KIAddin
Set Secure Data will clear all test data on the Live Data sheet.
Are you sure to proceed? Press Yes to continue and press No to cancel.
Yes
No

Figure 35, Unset Secure Data warning pop-up

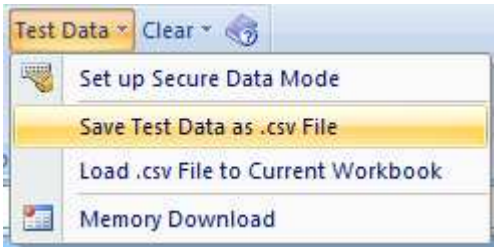
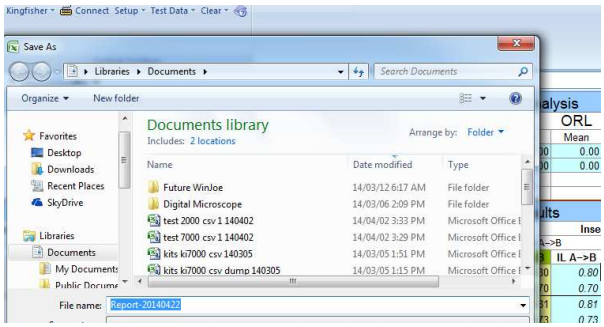
Copyright

10.4.2 Save / Load / Merge csv File

Test data can be Saved, Loaded and Merged in CSV format.

The default file name is of form *Report YYYYMMDD* e.g. Report 20130502

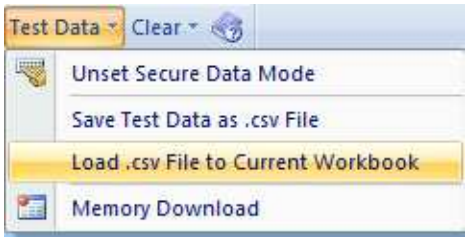
Save File:

Step	Save as CSV file
1	Select ***[Test Data] -> [Save Test Data as .csv File]***  **Figure 36, Save .... as .csv file**
2	Enter file name. Select ***[Save]***  **Figure 37, Specify filename**

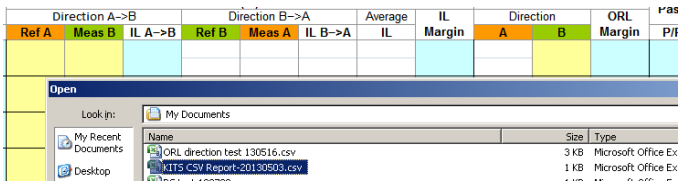
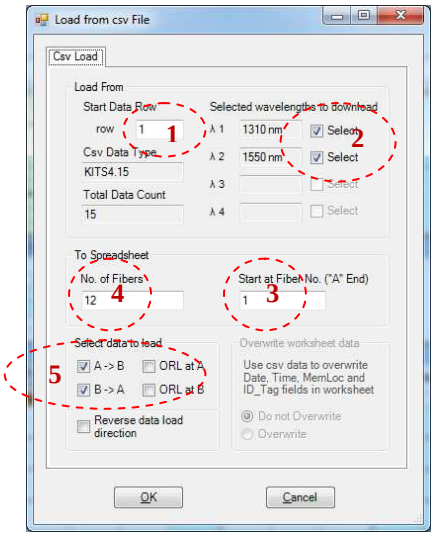
Load:

Prior to importing data into a workbook with existing data, it is highly recommended that the existing KITS workbook be saved prior to importing a csv file.

This is necessary as the csv file to be imported may have differing directional or referencing parameters to the open workbook.

Step	Load CSV file
1	Select ***[Test Data] -> [Load .csv File to Current Workbook]***  **Figure 38, Load .csv file**

Copyright

Step	Load CSV file
2	Select required .csv file.  **Figure 39, Loading a .csv file**
3	Select csv data to import:- 1. Data row to start downloading data from. 2. Wavelengths to download. Select spreadsheet fibre destination :- 3. Start at spreadsheet fibre number 4. Number of fibres to import data for.  **Figure 40, Select import requirements**
4	Select data to import:- 5. Choose direction A->B, B->A or both. Similarly for ORL if applicable. 6. Select ***[OK]*** to proceed or ***[Cancel]*** to exit.
5	If data is imported into the wrong column, either highlight this data and delete it or close the previously saved workbook without saving and re-open it. To reverse the data download direction Select ***[Reverse data load direction]*** and then ***[OK]***

Copyright

10.4.3 Memory Download

The instrument memory contents can be selectively dumped and mapped into the Live Data worksheet.

Memory download should not be performed with the instrument in Autotest mode.

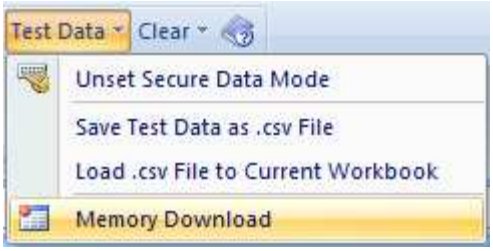
- Only wavelength data that matches the Live Data sheet configuration are downloaded into the Live Data worksheet.
- If unsure of the instrument memory contents, perform a Memory Dump using the 'Meter Dump' worksheet or 'Save Csv' program.

Download options to specify are:-

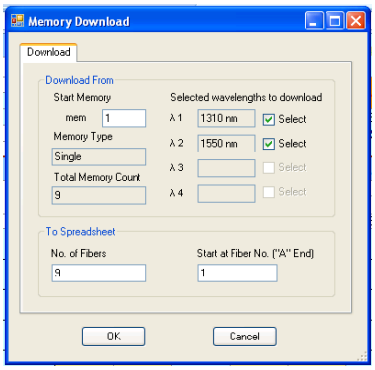
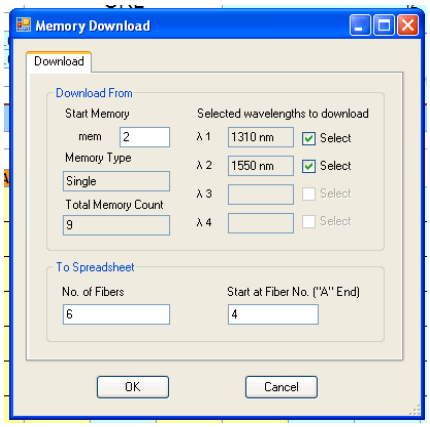
- Instrument 'start' memory location,
- Wavelengths to be downloaded,
- Spreadsheet 'start' fibre number,
- Spreadsheet number of memorylocations/ fibres to download.

The example below assumes:-

- Autotest
- use of a source and a meter at each end (or a simple Loss Test Set at each end.)
- Remote Referencing.
- Test direction configuration: Test A<->B
- Workbook configured to download the A->B direction test data.

Step	Memory download Procedure
1	Setup the Live Data worksheet to the required configuration. (Methodology discussed above)
2	Select ***[Test Data]*** -> ***[Memory Download]***  **Figure 41,**

Copyright

Step	Memory download Procedure
3	The ‘Memory Download’ pop-up will open • If no pop-up: the meter is not connected.  **Figure 42, ‘Memory Download’ pop-up**
4	Select:- • Meter memory location to start downloading data from:- ‘Start Memory’ • Wavelengths to be downloaded:- ‘Select wavelengths to download’ • Number of memory locations / results to be downloaded:- ‘No. Of Fibers’ • Fibre number in KITS to begin the download at:- ‘Start at Fiber No. (“A” End) For example; download from Memory location 2, data for 6 fibres starting at fibre 4. Refer **Figure 43** below.  **Figure 43, ‘Memory Download’ example**
5	Click ***[OK]*** to begin Memory Download. A ‘KITS please wait’ dialogue box will open during download, closing automatically when download complete. **Figure 44, ‘Memory Download’ in progress**

Copyright

10.5 Clear Menu

The Clear Sub menu is used to clear all or part of the test data. Operation is self explanatory.

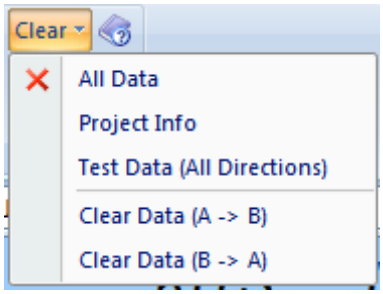


Figure 45, Clear sub menu

10.6 Jump to User Manual

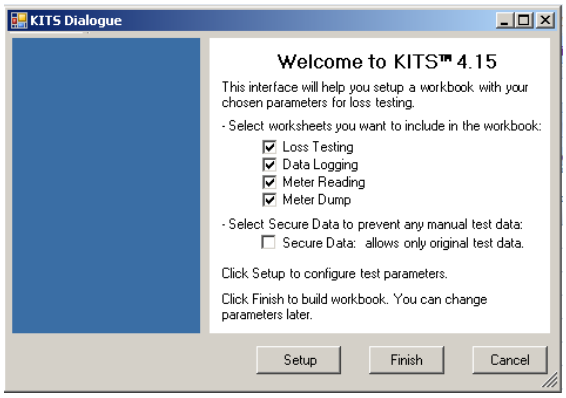
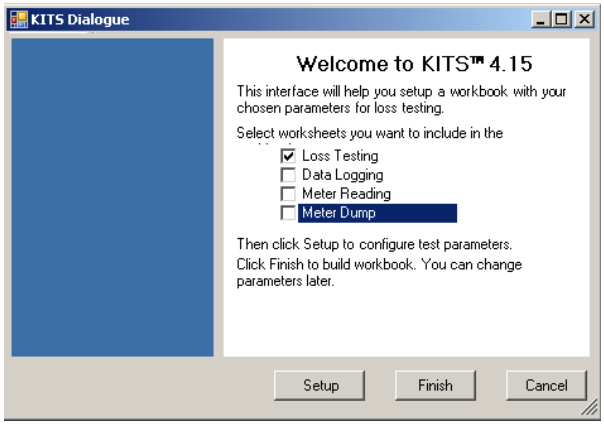
The User Manual can be accessed via symbol which is located just to the right of the [Clear] Menu. Refer **Figure 45** above.

Alternate methods of accessing the User Manual are coverd in Section **10.1.4** above.

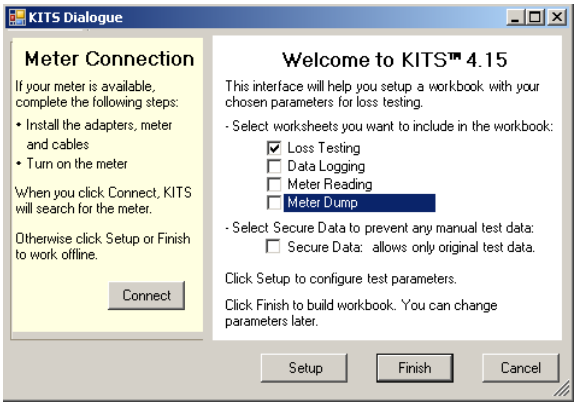
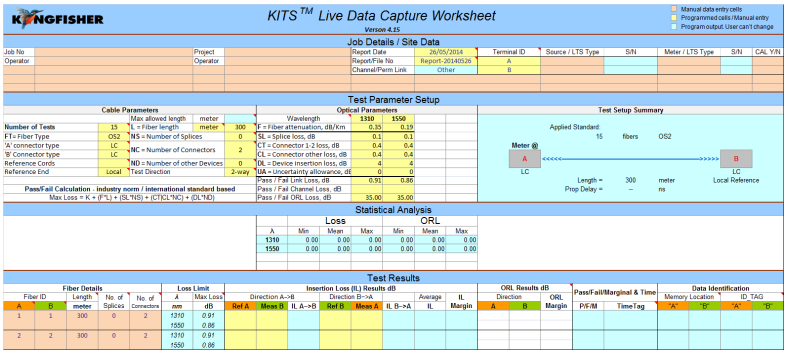
Copyright

11. LIVE DATA – TYPICAL TEST CONFIGURATION

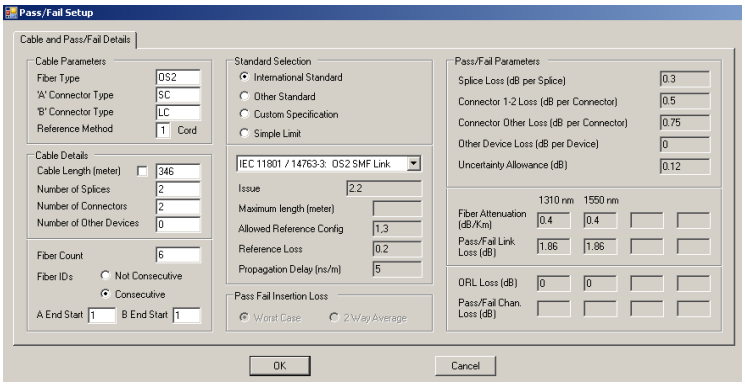
This section covers starting the KITS™ program and configuring it for loss testing.

Step	Configuration Procedure
1	On the computer screen, select the ***KITS™* Wizard** icon. The "Welcome to KITS™ 4.15" popup form will appear. Refer **Figure 46**.  **Figure 46, Start-up screen**
2	Tick the sheets to be included in the new workbook. For loss testing applications, it is normal to leave only 'Loss Testing' and perhaps 'Meter Dump' ticked. Refer **Figure 47**.  **Figure 47, Typical Loss Testing Selection** Click the ***[Finish]*** button when ready. ***Note:*** *For KITS 4.13 do not use the [setup] button as there is a minor bug, corrected in version 4.14 and later.*

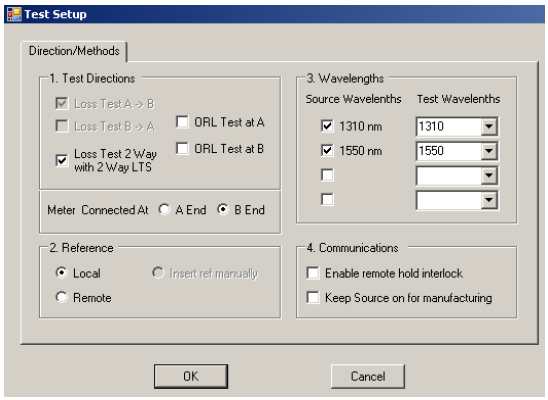
Copyright

Step	Configuration Procedure
3	KITS™ scans available ports to find the attached meter. • If the meter cannot be found, a 'Meter Connection' dialogue box opens as shown in **Figure 48**. • If the meter cannot be found, check the connection, ensure the meter is on, and try again. • Alternatively, KITS™ can be used offline with manual data entry.  **Figure 48, Meter Not found or not connected.**
4	Click ***[Finish]*** to open the 'Live Data' worksheet. Refer Step **5** below. or Click ***[Setup]*** to enter the test configuration menu. Refer Step **6** below.
5	Click the ***[Finish]*** button. KITS will open up into the Live Data sheet. • If an instrument is connected, the terminal identification (ID) name boxes will coloured orange or green. • If there is no instrument connected, both boxes will be grey as shown in **Figure 49** below.  **Figure 49, Live Data worksheet – pre-configuration**
Configure all test parameters	

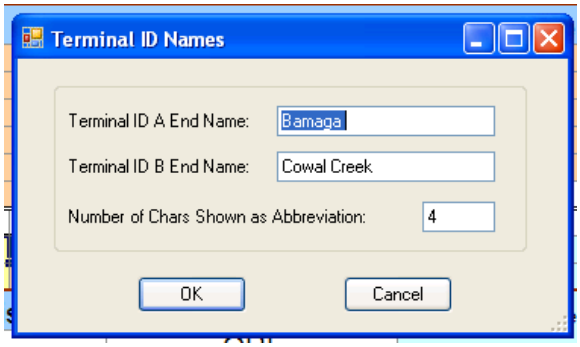
Copyright

Step	Configuration Procedure
6	First, enter the 'pass/fail setup' parameters:- • Press ***[Setup]*** • Press ***[Pass/Fail Setup]*** • Enter test parameters:- o Standard selection (should be selected first) *** o Cable parameters o Cable details o Fibre count o Fibre identification number *** Once a standard is selected the following restrictions apply:- • Specifications that are set by the standard are greyed as they are not user changeable. • KITS will not allow a referencing method or length parameter at variance to the standard.  **Figure 50, Typical test parameters.** ***** Hint**: Access this sub-menu directly by clicking on 'Number of Tests' in the yellow coloured cell on the left hand side of the 'Test Parameter Setup' section. (any yellow cells in this section will do the same)*

Copyright

Step	Configuration Procedure
7	Next, enter the 'Test Setup' parameters:- • Press ***[Setup]*** • Press ***[Test Setup]*** 1./ select test direction • To test A->B tick the box 'Loss Test A->B' • To test in both directions using a source and a meter tick boxes 'Loss Test A->B' and 'Loss Test B->A' • If using a two way Loss Test Set (LTS) to test in both directions automatically, tick the box 'Loss Test 2 way with 2 way LTS' 2./ Enter the meter location e.g. • For testing A->B configure the meter at the B end. • To test B->A configure the meter at the A end. 3./ Configure for Local or Remote referencing. • For an explanation of Local & Remote Referencing, refer **Section** Error! Reference source not found.**.** 4./ Choose wavelength(s) to be used for testing.  **Figure 51, Typical Test setup configuration** ***Note:*** *Whilst the 'Test Setup' and the 'Pass/Fail Setup' sub-menus can be configured in any order, it is recommended that the 'Pass/Fail Setup' sub-menu be configured first to minimise any interaction between them.*
	Test Setup – Wavelengths: Additional information: 1. If no Meter is connected, the KITS dropdown menu shows a range of common wavelengths to select from. 2. If a meter is connected, the available wavelengths are those within the meter. 3. In all cases, any arbitrary wavelength can be selected by typing its value into the appropriate drop down menu. E.g 1383

Copyright

Step	Configuration Procedure
8	By Default the two terminal ends are called ‘A’ and ‘B’ If required the terminals can be given individual names for identification purposes. To assign terminal names:- • Press ***[Setup]*** • Press ***[Terminal ID Names].*** • Assign names • Assign number of characters uaed for name abbreviation. • Press ***[OK]***  **Figure 52, Terminal Identification (ID) sub-menu**
9	The Workbook is now configured for testing. Loss testing cells that are configured to accept test data have a yellow background colour. Cells in which data is not required have no background colour.

Copyright

12. LIVE DATA - TEST DATA ENTRY

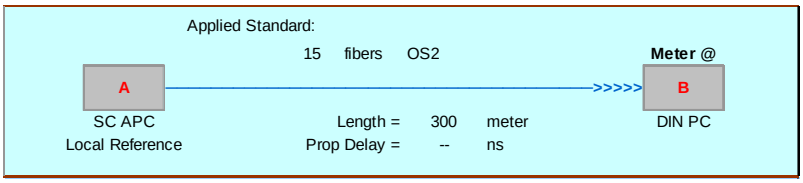
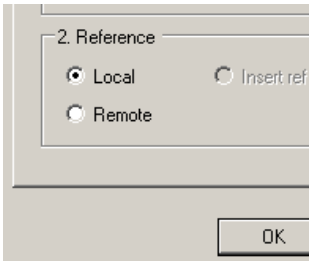
As per Section 4.1.1, test data can be input into the 'Live Data' sheet in 4 ways:-

- manual entry **(only if Data Secure Mode is unset)**
- clicking with a mouse during live testing or
- by memory download direct from instrument
- Import from CSV file.

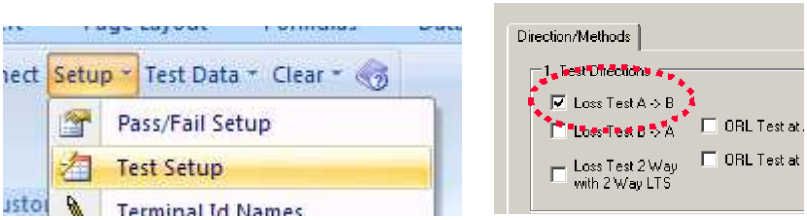
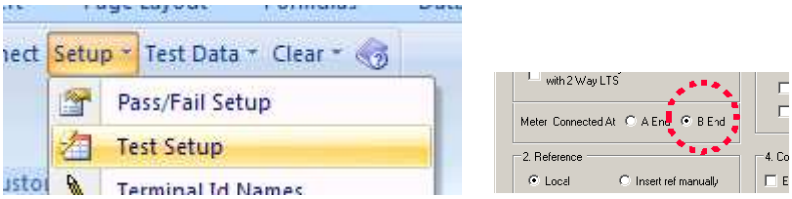
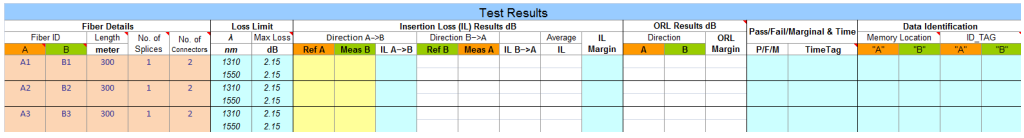
12.1.1 Manual Data Entry (only when Data Secure Mode is unset) - local referencing, one-way test.

The example below assumes:-

- Local Referencing.
- Test direction configuration: Test A->B

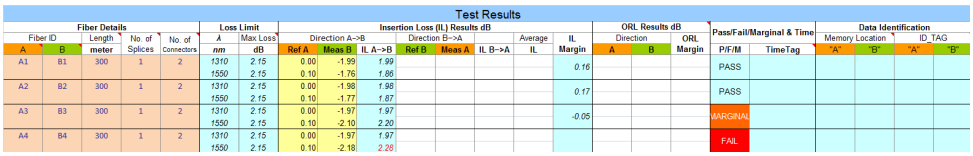
Step	Manual data entry, one way, local reference Procedure
1	The test configuration drawing shows the current configuration including 'Meter' location.  **Figure 53, Test configuration**
2	If required, configure the 'reference type' in KITS so that test data will be correctly inserted. To Change:- • Select ***[Setup]*** -> ***[Test Setup]*** • Select 'Local' Reference. • Click On ***[OK]*** To Confirm  **Figure 54, KITS configured for Local Reference**

Copyright

Step	Manual data entry, one way, local reference Procedure
3	If required, configure the test direction in KITS. In this example we are testing A->B To change:- • Select ***[Setup]*** -> ***[Test Setup]*** • Select Test Directions A->B. • Click on ***[OK]*** to confirm.  **Figure 55, KITS configured testing in the A->B direction**
4	If required, configure the meter location in KITS so that test data will be inserted in the correct direction. In this example we are testing A->B To change:- • Select ***[Setup]*** -> ***[Test Setup]*** • Select Meter connected at 'B End' • Click on ***[OK]*** to confirm.  **Figure 56, KITS configured Meter at 'B' for receiving A->B direction**
5	Enter the test data as required into the yellow columns/cells under the headings Ref A and Meas B. • **Ref A**: Transmitted power. Power level that is sent from the 'A' end to the 'B' end. • **Meas B** Received power. Power received at the 'B' end.  **Figure 57, Local Reference, A->B**

Copyright

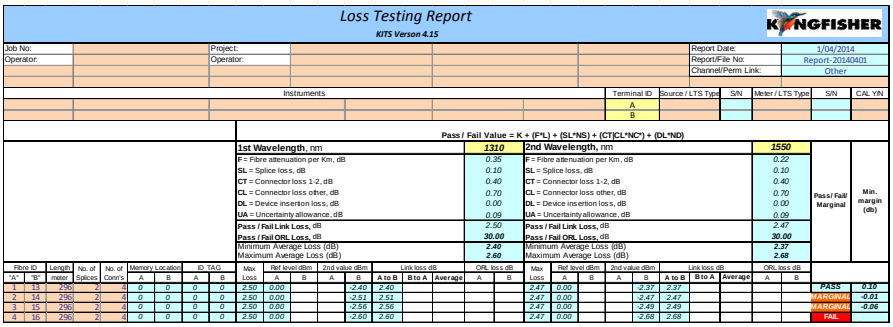
Step	Manual data entry, one way, local reference Procedure
6	When all required test data for a particular fibre has been entered, KITS will display the test result analysis. • Test parameter failures are shown in red and indicated as 'FAIL' in the P/F/M column. • Marginal results are normally accepted as a Pass. Further guidance for the treatment of marginal resuts can be found in International Standard ISO/IEC 14763-2
7	To produce a traditional style report. • Click on the worksheet ***[Loss Testing]*** o The test data will be automatically copied over from the 'Live Data' sheet.



Test Results

Fiber Details					Loss Limit		Insertion Loss (IL) Results dB								ORL Results dB			Pass/Fail/Marginal & Time		Data Identification			
Fiber ID		Length	No. of	No. of	λ	Max Loss	Direction A->B			Direction B->A			Average	IL	Direction		ORL			Memory Location		ID_TAG	
A	B	meter	Splices	Connectors	nm	dB	Ref A	Meas B	IL A->B	Ref B	Meas A	IL B->A	IL	Margin	A	B	Margin	P/F/M	TimeTag	"A"	"B"	"A"	"B"
A1	B1	300	1	2	1310	2.15	0.00	-1.99	1.99					0.16				PASS					
					1550	2.15	0.10	-1.76	1.86														
A2	B2	300	1	2	1310	2.15	0.00	-1.98	1.98					0.17				PASS					
					1550	2.15	0.10	-1.77	1.87														
A3	B3	300	1	2	1310	2.15	0.00	-1.97	1.97					-0.05				MARGINAL					
					1550	2.15	0.10	-2.10	2.20														
A4	B4	300	1	2	1310	2.15	0.00	-1.97	1.97									FAIL					
					1550	2.15	0.10	-2.18	2.28														

Figure 58, IL assessment



Loss Testing Report

KITS Version 4.15

KINGFISHER

Job No:		Project:		Report Date:	1/04/2014
Operator:		Operator:		Report/File No:	Report-20140401
				Channel/Perm Link:	Other

Instruments									
						Terminal ID	Source / LTS Type	S/N	Meter / LTS Type	S/N	CAL Y/N
						A					
						B					

Pass / Fail Value = K + (F*L) + (SL*NS) + (CT|CL*NC*) + (DL*ND)

	1st Wavelength, nm	1310	2nd Wavelength, nm	1550	Pass/ Fail/ Marginal	Min. margin (db)
F = Fibre attenuation per Km, dB		0.35	F = Fibre attenuation per Km, dB	0.22		
SL = Splice loss, dB		0.10	SL = Splice loss, dB	0.10		
CT = Connector loss 1-2, dB		0.40	CT = Connector loss 1-2, dB	0.40		
CL = Connector loss other, dB		0.70	CL = Connector loss other, dB	0.70		
DL = Device insertion loss, dB		0.00	DL = Device insertion loss, dB	0.00		
UA = Uncertainty allowance, dB		0.09	UA = Uncertainty allowance, dB	0.09		
Pass / Fail Link Loss, dB		2.50	Pass / Fail Link Loss, dB	2.47		
Pass / Fail ORL Loss, dB		30.00	Pass / Fail ORL Loss, dB	30.00		
Minimum Average Loss (dB)		2.40	Minimum Average Loss (dB)	2.37		
Maximum Average Loss (dB)		2.60	Maximum Average Loss (dB)	2.68		

Fibre ID		Length	No. of	No. of	Memory Location		ID_TAG		Max	Ref level dBm		2nd value dBm		Link loss dB			ORL loss dB		Max	Ref level dBm		2nd value dBm		Link loss dB			ORL loss dB			
"A"	"B"	meter	Splices	Conn's	A	B	A	B	Loss	A	B	A	B	A to B	B to A	Average	A	B	Loss	A	B	A	B	A to B	B to A	Average	A	B		
1	13	296	2	4	0	0	0	0	2.50	0.00			-2.40	2.40					2.47	0.00			-2.37	2.37				PASS	0.10
2	14	296	2	4	0	0	0	0	2.50	0.00			-2.51	2.51					2.47	0.00			-2.47	2.47				MARGINAL	-0.01
3	15	296	2	4	0	0	0	0	2.50	0.00			-2.56	2.56					2.47	0.00			-2.49	2.49				MARGINAL	-0.06
4	16	296	2	4	0	0	0	0	2.50	0.00			-2.60	2.60					2.47	0.00			-2.68	2.68				FAIL	

Figure 59, Traditional KITS report layout

The user can select to display 1 or 2 wavelengths on this sheet. Click on the yellow 1st or 2nd wavelength cells to specify the wavelength(s) displayed.

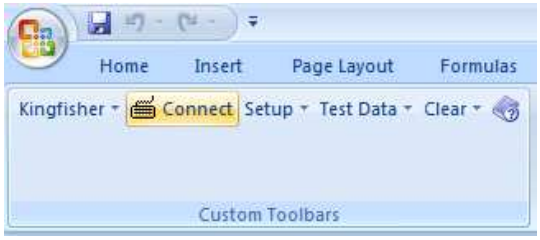
Copyright

12.1.2 One click entry - local referencing, one-way test.

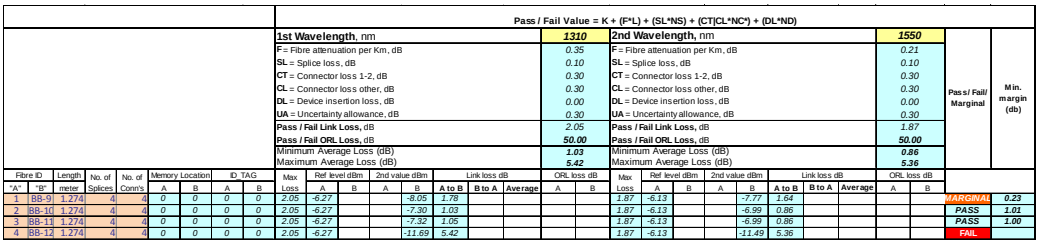
This can be performed with the instruments acting under CW or Autotest.

The example below assumes:-

- Autotest
- use of a source and a meter at each end (or a simple Loss Test Set at each end.)
- **Local** Referencing.
- Test direction configuration: Test A->B.

Step	Autotest, one way, local reference Procedure
1	Configure KITS as per **Sections 12.1.1** and **12.1.2** above.
2	Connect instrument to the KITS software. If the instrument is turned On and connected to the computer when KITS starts, KITS will automatically connect
	Manual connection
3	Click on [Connect]  **Figure 60, Connect instrument to KITS software**
	Enter test data
4	In the KITS worksheet, click on 'Ref A' or 'Meas B' for the relevant fibre number. • Test data will be automatically extracted into KITS. • KITS will automatically analyse the results. Pass/Fail assessment is based upon the Pass/Fail configuration. Test Results Fiber Details: Fiber ID A, B; Length meter; No. of Splices; No. of Connectors Loss Limit: λ nm; Max Loss dB Insertion Loss (IL) Results dB: Direction A->B Ref A, Meas B, IL A->B; Direction B->A Ref B, Meas A, IL B->A; Average IL; IL Margin ORL Results dB: Direction A, B; ORL Margin Pass/Fail/Marginal & Time: P/F/M; TimeTag D: Memory Lo "A" A1 B1 300 1 2 — 1310: 2.15, -8.85, -8.92, 0.07 — 1550: 2.15, -8.34, -8.50, 0.16 — IL Margin 1.99 — PASS — 140526/12:26:36 / 140526/12:26:36 A2 B2 300 1 2 — 1310: 2.15, -8.85, -8.90, 0.05 — 1550: 2.15, -8.34, -8.58, 0.24 — IL Margin 1.91 — PASS — 140526/12:26:48 / 140526/12:26:48 A3 B3 300 1 2 — 1310: 2.15, -8.85, -9.04, 0.19 — 1550: 2.15, -8.34, -10.31, 1.97 — IL Margin 0.18 — MARGINAL — 140526/12:28:49 / 140526/12:28:49 A4 B4 300 1 2 — 1310: 2.15, -8.85, -9.96, 1.11 — 1550: 2.15, -8.34, -15.91, 7.57 — FAIL — 140526/12:27:18 / 140526/12:27:18 **Figure 61, Test data A-> B'** • Test parameter failures are shown in red and indicated as 'Fail' in the P/F column. • Marginal results are normally accepted as a pass. • Fibres that are re-tested are marked in the 'Time Tag' column. **Note 1:** KITS will not accept data clicked into the wrong cells. **Note 2:** test data wavelength must match KITS configuration.
	Alternate Test report layout

Copyright

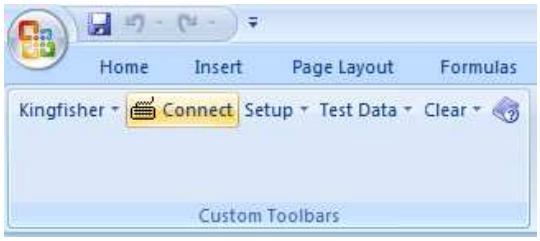
Step	Autotest, one way, local reference Procedure
5	If desired the test results can be presented in the traditional style, read only 'Loss Testing' sheet. • Click on the worksheet ***[Loss Testing]*** The test data will be automatically copied over from the 'Live Data' sheet.  **Figure 62, Traditional KITS report layout – one way** The user can select to display 1 or 2 wavelengths on this sheet. Click on the yellow 1st or 2nd wavelength cells to specify the wavelength(s) displayed.

12.1.3 One click entry - local referencing, two-way test

This can be performed with two instruments acting under CW or Autotest.

The example below assumes:-

- Autotest
- use of a KI734x at each end
- **Local** Referencing.
- Test direction configuration: Test A<->B.

Step	Autotest, two way/bi-directional, local reference Procedure
1	Configure KITS as per **Sections 12.1.1** and **12.1.2** above for two-way / bidirectional testing.
2	Connect instrument to the KITS software. • If the instrument is turned on and connected to the computer when KITS starts, KITS will automatically connect
	Manual connection
3	Click on ***[Connect]***  **Figure 63, Connect instrument to KITS software**

Copyright

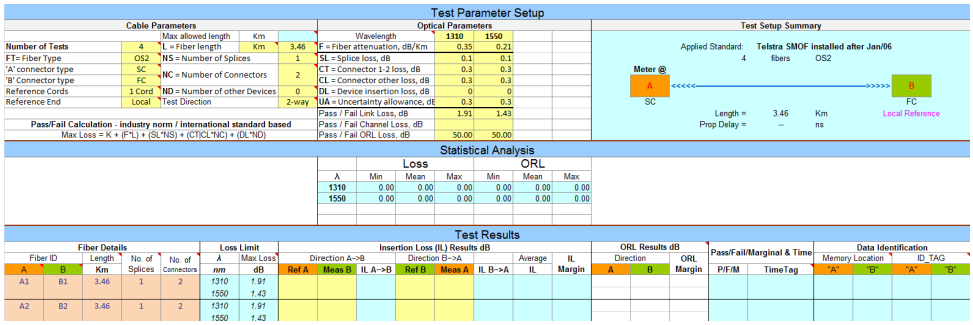
Step	Autotest, two way/bi-directional, local reference Procedure
4	

Figure 64, Instrument connected two-way configuration

Enter test data

5	In the KITS worksheet, click on 'Ref' or 'Meas' for the relevant fibre number. • The test data will be automatically extracted into KITS. • KITS will automatically analyse the results. • Pass/Fail assessment is based upon the Pass/Fail configuration.

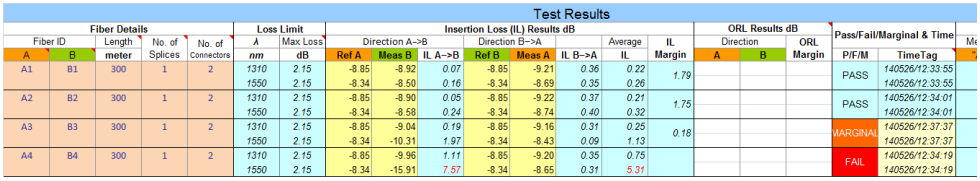


Figure 65, Test data A<-> B'

- Test parameter failures are shown in red and indicated as 'Fail' in the P/F column.
- Marginal results are normally accepted as a pass.
- Fibres that are re-tested are marked in the 'Time Tag' column.

Note 1: KITS will not accept data clicked into the wrong cells.

Note 2: test data wavelength must match KITS configuration.

Alternate test report layout

6	If desired the test results can be presented in the traditional style <u>read only</u> 'Loss Testing' sheet. • Click on the worksheet ***[Loss Testing]*** • The test data will be automatically copied over from the 'Live Data' sheet.

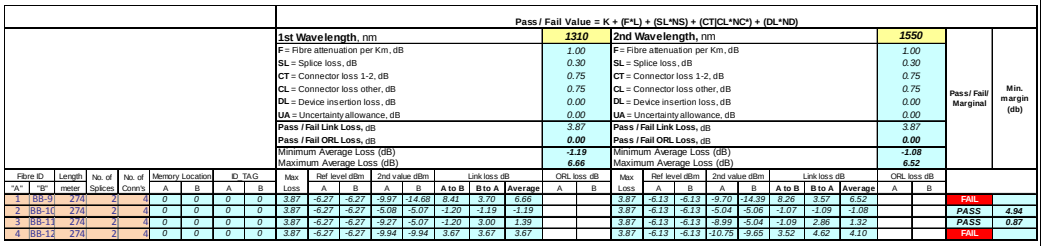


Figure 66, Traditional KITS report layout – two way

The user can select to display 1 or 2 wavelengths on this sheet. Click on the yellow 1st or 2nd wavelength cells to specify the wavelength(s) displayed

Copyright

12.1.4 Secure data mode

In Secure Data Mode, certain restrictions are placed upon test data entry so as to prevent manual data modification. This is discussed more fully in Section **10.4.1** above.

One click entry is otherwise the same as discussed above in Sections **12.1.2** & **12.1.3** above.

12.1.5 ORL Measurement

If you have an ORL meter then you may perform all the tests detailed above plus Optical Return Loss (ORL) measurement.

12.1.5.1 AutoTest ORL measurement

An ORL equipped Kingfisher instrument operating in two-way AutoTest mode, automatically measures ORL.

Depending upon the test set up selected, KITS™ may already be configured for ORL measurement.

- When configured to record ORL, the ORL Results column(s), in the Live Data worksheet will be coloured yellow.

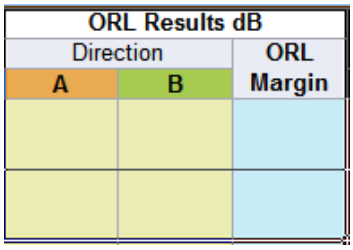
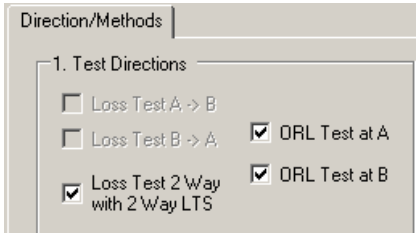


Figure 67, ORL configured

Configure KITS™ for 2-way ORL measurement as per below.

Step	Setup 2-Way ORL measurement
1	Select ***[Setup] ->[Test Setup].***
2	Select **[ORL Test at A]** and **[ORL Test at B]**  **Figure 68, Select 2-way ORL**
	Set up the KI734xx series 2-way ORL instruments into 2-way mode and connect to KITS
3	In the KITS worksheet, click on 'Ref', 'Meas' or ORL for the relevant fibre number. • The test data will be automatically extracted into KITS™.

Note 1: If the circuit under test has a small insertion loss, the instrument's ORL isolation may not be sufficient for accurate ORL readings. In such situations, a manual measurement should be considered. Refer Section **12.1.5.2** below.

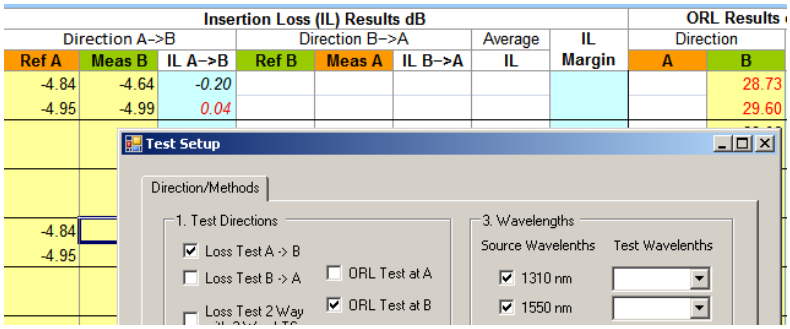
Note 2: The standard KI734xx series 2-way ORL meters have an ORL isolation of about 25 dB. ORL isolation can be optionally increased to about 50 dB at time of purchase. Most existing SMF instruments can also be modified.

Copyright

12.1.5.2 Manual ORL measurement

Manual ORL measurement is usually performed with the Far End connected to an ORL terminator.

Configure KITS™ for ORL measurement as per below.

Step	Manual ORL measurement
1	Select ***[Setup] ->[Test Setup].***
2	Select [ORL Test at A] or [ORL Test at B] • To measure ORL as seen from the 'A' end select **[ORL Test at B]** • To measure ORL as seen from the 'B' end select **[ORL Test at A]**  **Figure 69, Select ORL location**
3	If necessary, terminate the Far End in an ORL termination.
4	Measure: In the KITS worksheet, click on 'Ref', 'Meas' or ORL for the relevant fibre number and wavelength. • The test data will be automatically extracted into KITS™.

Copyright

13. LOSS TESTING WORKSHEET

The Loss Testing worksheet provides test report data in the traditional KITS™ 3.xx layout format and should be seen as an alternative report layout to the 'Live Data worksheet'.

- All data in the Loss Testing worksheet is loaded from the 'Live Data worksheet'.
- The Lost Testing sheet can display 1 or 2 wavelengths.
- The Job, Cable and Formulae sections of the worksheet can be optionally displayed or hidden during testing, saving or printing.

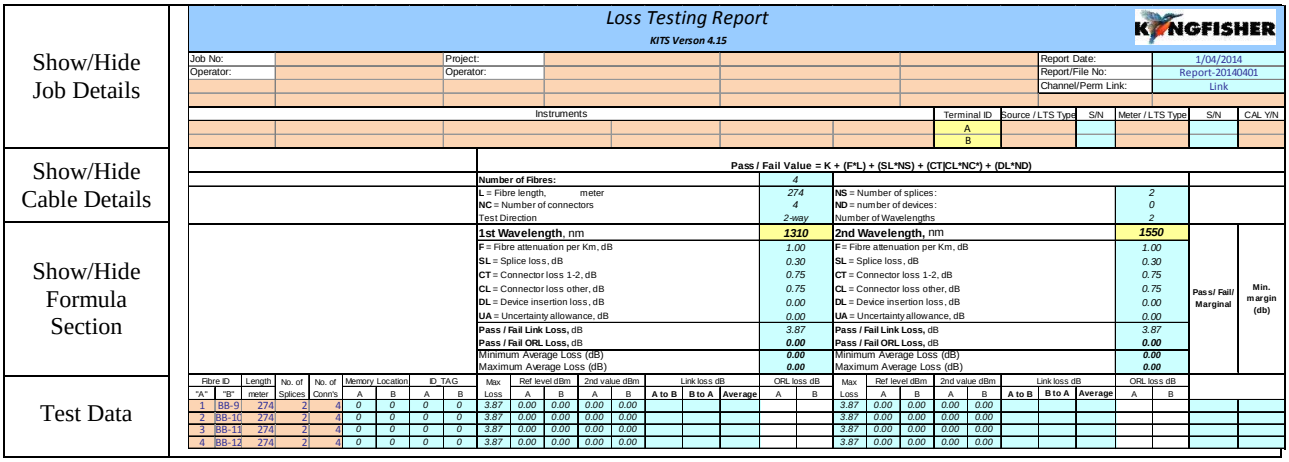


Figure 70, Loss Testing Worksheet – all fields displayed

After data is entered in the Live Data sheet, select the Loss Testing tab (or click ***Kingfisher / Loss testing***) to view this date in the Loss Testing sheet format.

The data cells are filled in automatically using Excel formulae. By default, it uses the data of the first and second wavelength. Different wavelengths can be selected by clicking on either the 1st or 2nd wavelength cells (with yellow background).

The three show/hide menu items under ***Show/Hide*** **Details** derermine which sheet sections to view and print:

- ***Show/Hide Job Details*** toggles in between showing or hiding the Job Details / Site Data section.
- ***Show/Hide Cable Details*** toggles in between showing or hiding the cable parameters.
- ***Show/Hide Formula Section*** toggles in between showing or hiding the pass/fail formula parameters.
    - To produce a **standards compliant report** all sections should be displayed prior to printing.

Copyright

14. METER READING WORKSHEET

The meter reading work sheet provides basic meter functions and is usefull for confirming instrument connection, and where a large display is required.

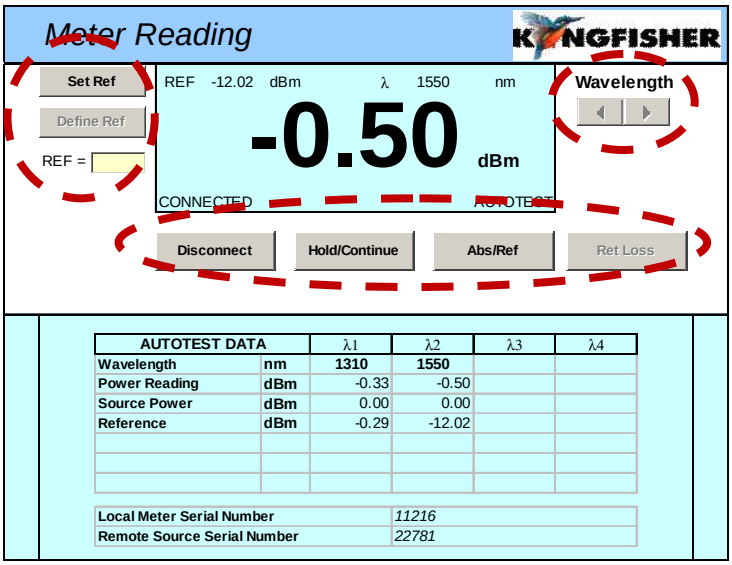
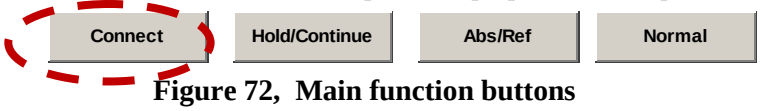
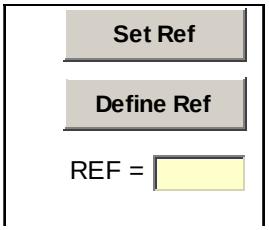
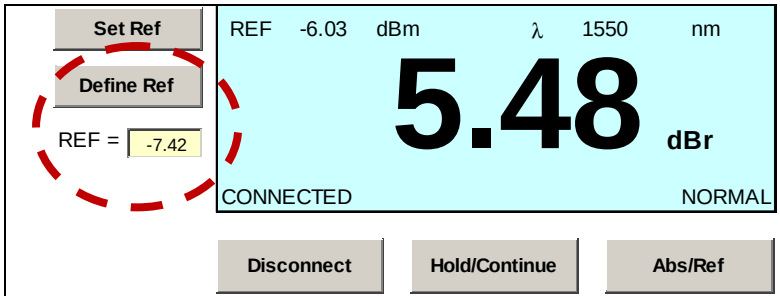


Figure 71, Meter Display

Operations can be as follow (most of these operations directly control the meter):

Step	Meter Display Functions
	Connect / Disconnect
1	To connect / disconnect the meter click the [***Connect]*** / [***Dissconnect]*** button.  **Figure 72, Main function buttons** When the instrument is 'Connected', 'CONNECTED' will show on the display. Refer **Figure 71** above.
	Display Hold
2	To stop / resume the display update, click the [***Hold/Continue]*** button. • When in 'Hold' mode, 'HOLD' will show on the display.
	Change wavelength (λ)
3	To change the wavelength display, click the ***[◄]*** or ***[►]*** up/down button. • This feature not available when source is in Autotest mode. • In Autotest mode, the display shows live data.
	Select Absolute / Relative mode
4	To toggle absolute / relative modes, click the ***[Abs/Ref]*** button.
	Show ORL
5	To toggle Return Loss / Normal, click the [***Ret Loss] / [Normal]*** button. • Applicable to instruments that measure ORL

Copyright

Step	Meter Display Functions
	Set or Define Reference **
6	To set the Reference, click ***[Set Ref]***. • This feature not available in Autotest mode. • This is a per wavelength setting.  **Figure 73, Set Reference**
	Set a user specified Reference **
7	Enter the user specified reference the textbox ***[Ref=]*** and then click ***[Define Ref]*** • This feature not available when source is in Autotest mode. • This is a per wavelength setting.  **Figure 74, User specified Reference**

** The Reference value can also be Set or Defined via the Live Data worksheet. Refer Section **10.3.4** on page **23** above.

Copyright

15. DATA LOGGING WORKSHEET

The Data Logging sheet supports data logging wheather the meter is in Power Meter, one-way or two-way Autotest mode.

The following statistical information is recorded:-

- max,
- min,
- mean,
- standard deviation and
- current reading.

15.1 Automatic Data Logging

Automatic data logging allows the user to specify:-

- the meter wavelength,
- the size of the log,
- the log time interval and
- Absolute or Relative mode,

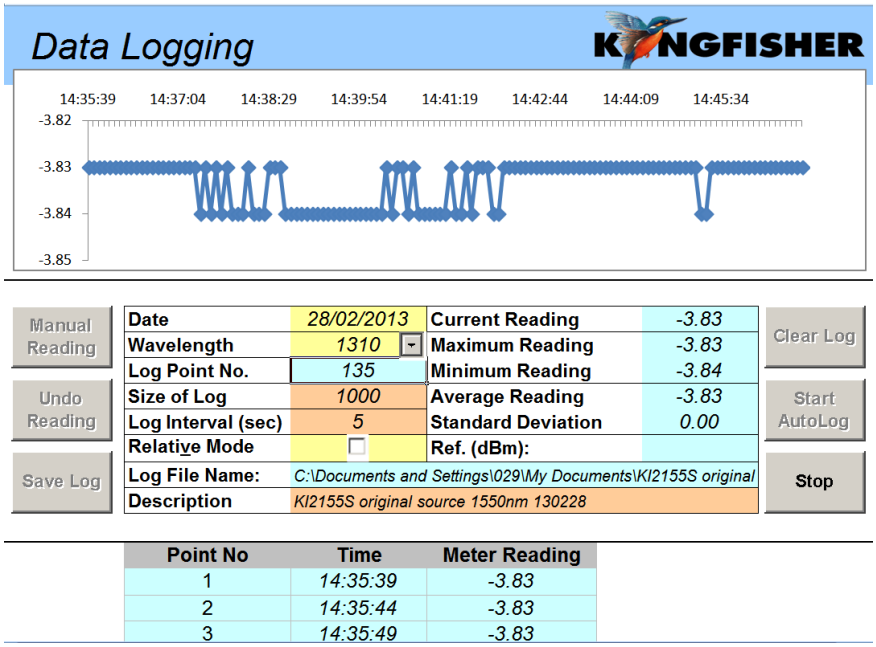


Figure 75, Data logging

During the data logging, each data point is automatically written to the specified log file, minimising data loss in case of a process interruption.

The source should be in CW mode, however data loggingmaybe possible in AutoTest mode.

Use of source in AutoTest mode:

Depending upon sample interval and computer speed, the reading may become unreliable if the instrument is in Autotest mode. Autotest samples intervals greater than 5 seconds are generally OK.

Caution: If sampling with the source in Autotest mode is required, trial test parameters before committing to the test.

Copyright

Step	Automatic data logging Procedure
1	Select the ***Data Logging*** worksheet.
2	To select the wavelength, use the arrow buttons next to [***Wavelength]***. **Note:** Meter must be connected for this function.
3	Define [***Size of log]***
4	Define [***Log Interva]l (sec).***
5	If required, select [***Relative Mode***]
6	If required, add a [***Description***]
7	To clear existing data, select [***Clear Log]***
8	To start logging, click ***[Start Autolog]*** and enter file name in the dialog box.. • Consider using the '***Description***' from Step 6 above for the file name.
9	To stop or halt the data logging before it is completed, click ***[Stop].*** To restart the data logging, click ***[Continue].***

15.2 Manual Data Logging

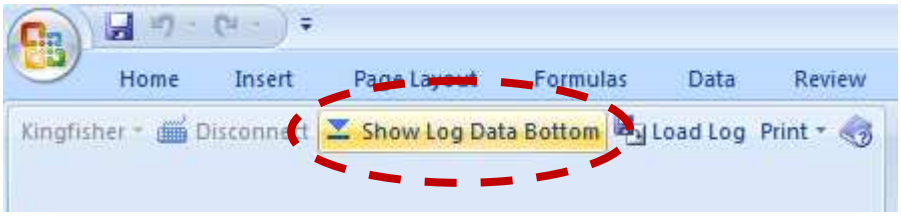
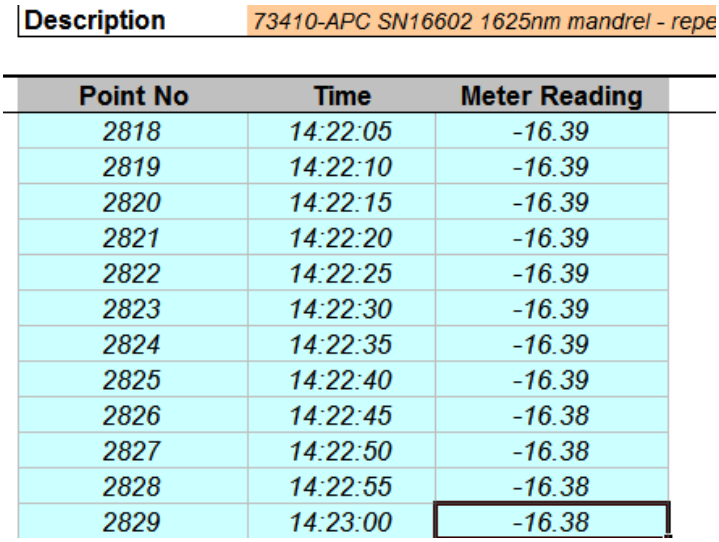
Data is stored upon uer command.

Step	Manual data logging Procedure
1	Select the ***Data Logging*** worksheet.
2	To clear existing data, select the ***[Clear Log]*** button
3	To set the wavelength, use the arrow buttons next to ***[Wavelength***] **Note:** Meter must be connected for this function.
4	If required, select ***[Relative Mode***]
5	If required add a ***[Description***]
6	For each click of ***[Manual Reading]***, a data point is logged. The data point index and the size of the log is automatically incremented.
7	To undo the last reading, select ***[Undo Reading]***. This decreases the data point index, but not the size of log value.
8	To save the data log, click the ***[Save Log]*** button and enter file name in the dialog box.

Copyright

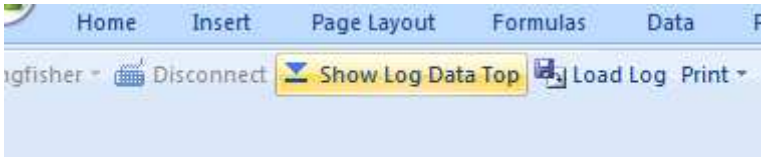
15.3 Viewing data whilst logging

Whilst the data is being logged, the default is to show the earliest (top of the spreadsheet) readings. If required the user can display the current readings. (bottom of the spreadsheet)

Step	View data options whilst logging
1.	To show current data readings, select ***[Show Log Data Bottom]***  **Figure 76, Select bottom data display**
2.	

Point No	Time	Meter Reading
2818	14:22:05	-16.39
2819	14:22:10	-16.39
2820	14:22:15	-16.39
2821	14:22:20	-16.39
2822	14:22:25	-16.39
2823	14:22:30	-16.39
2824	14:22:35	-16.39
2825	14:22:40	-16.39
2826	14:22:45	-16.38
2827	14:22:50	-16.38
2828	14:22:55	-16.38
2829	14:23:00	-16.38

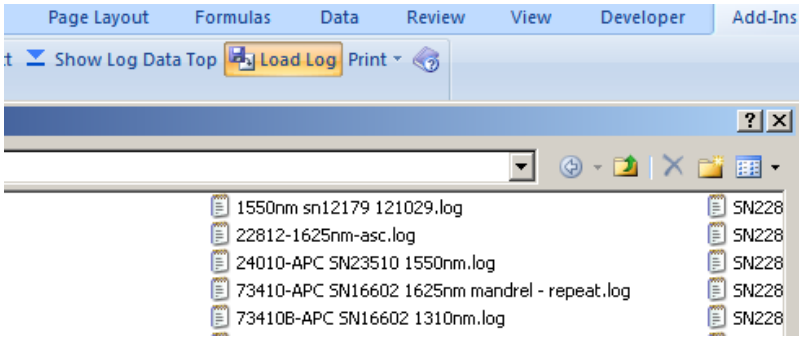
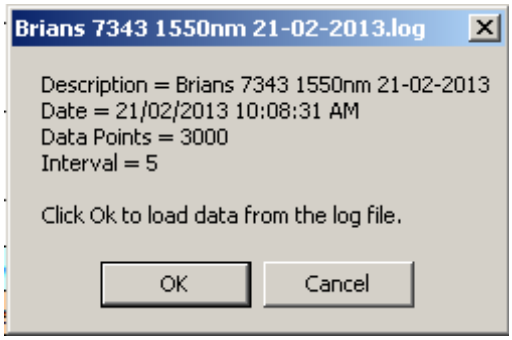
Figure 77, Current logging data

3.	To revert to the top of the data readings, select ***[Show Log Data Top]***  **Figure 78, Select top data display**

Copyright

15.4 Loading saved log files

A saved log file can loaded into the spreadsheet.

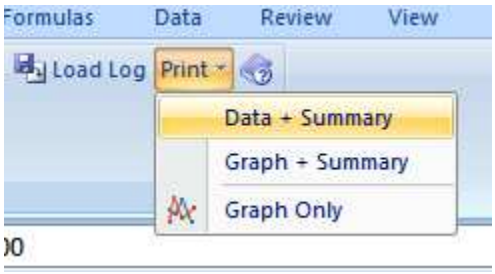
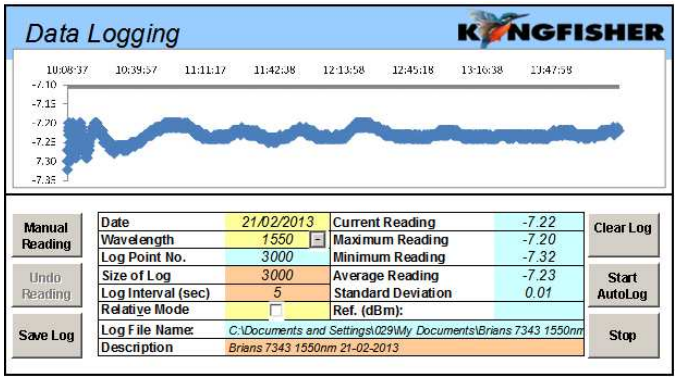
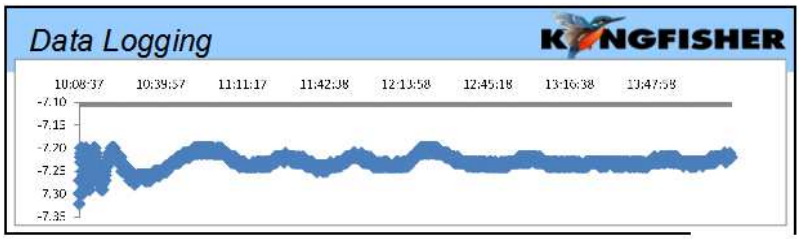
Step	Loading saved Log file
1.	Ensure no instrument is connected to KITS.
2.	Select ***[Load Log]***  **Figure 79, Select Log file to load**
3.	A pop up dialogue box provides information about the selected Log file. Select ***[OK]*** to load or [Cancel] to back out.  **Figure 80, Confirm log file to load** **Note:** very large Log files may take a while to load. Load completion, is easily confirmed by the presence of the graph.

Copyright

15.5 Printing log files

Besides the usual Windows print options, the KITS™ Data Logging worksheet has three inbuilt print options:-

- Data + Summary
- Graph + Summary
- Graph only

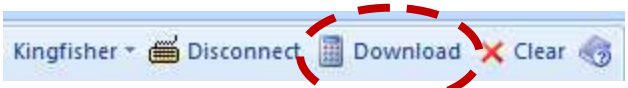
Step	Printing Log files
1.	Load the Log file to be printed. **Note:** very large Log files may take a while to load. Load completion, is easily confirmed by the presence of the graph.
2.	To print **Data + Summary** select ***[Print]*** , then select ***[Data + Summary]***  **Figure 81, Data Log print options**
3	To print Graph **+ Summary** select ***[Print]*** , then select ***[Graph + Summary]***  **Figure 82, Graph + Summary**
4.	To print the **Graph** only select ***[Print]*** , then select ***[Graph Only]***  **Figure 83, Graph Only**

Copyright

16. METER DUMP WORKSHEET

The Meter Dump worksheet provides a simple and convenient way to download and view the loss test data stored in an instrument.

Unlike the Live Data sheet where only the memory readings that match the selected wavelengths are downloaded, the Meter Dump sheet downloads all data from meter memory. No analysis is performed.

Step	Meter Dump
1.	Select ***[Download]***  **Figure 84, KI7600 Meter Dump Download button**
2.	All memory cells are downloaded to the worksheet.

Data downloaded from S/N 11216, Date/Time 140526/03:15:36

Fibre	WL	Power	Ref	ORL	Remote Power	Remote Ref	Remote ORL	Remote S/N
1	1310 nm			-12.55				
2	1550 nm			-14.63				
3	1310 nm	-0.09	-0.10					
3	1550 nm	-0.25	-0.25					
4	1310 nm	-8.33	-0.10					
4	1550 nm	-19.31	-0.25					

Figure 85, KI7600 Power Meter Dump

Data downloaded from S/N 25018, Date/Time 140327/01:11:22

Fibre	Date	Time	Type	ID Tag	Remote S/N	WL	Power	Ref	Nom
1	2/07/13	12:02	2WIAuto	TAGA001	24043	1310 nm	-3.10	-3.59	-3.00
1	2/07/13	12:02	2WIAuto	TAGA001	24043	1550 nm	-2.94	-2.98	-3.00
2	9/07/13	8:13	2WIAuto	TAGA002	24043	1310 nm	-2.89	-3.27	-3.00
2	9/07/13	8:13	2WIAuto	TAGA002	24043	1550 nm	-2.97	-3.08	-3.00

Figure 86, KI2600 Power Meter Dump

3	To Clear the data select ***[Clear]***.

Copyright

17. EXTRACT MEMORY TO CSV

KITS™ has an option to download data from an instrument memory directly into a text file.

This feature is idependant of Microsoft Office.

Step	Extract to CSV
1.	Connect the instrument to the RS232 or USB port of the PC.
2.	Click ***[Start] -> [Programs] -> [Kingfisher Kits] -> [Save Csv]***
3.	In the Open box specify a filename and choose the location to save the file.
4.	Click the Close button and the data will be saved to this text file. • When the instrument does not show the RS232/USB symbol the download is complete. • The exact CSV file format depends upon the instrument type. E.g. KI7000 series differs to that of KI2000 series. • The file includes a checksum.

Save csv output from KI2X00. SN: 25018	Time in 24h format. Wavelengths in nm. Optical Power values in dBm.													
Mem	**Date**	**Time**	**Type**	**ID_Tag**	**RemSN**	**Wl1**	**Pwr1**	**Ref1**	**Nom1**	**Wl2**	**Pwr2**	**Ref2**	**Nom2**	**Wl3**
1	26/05/2014	10:09	2WIAuto	THUR001	11216	1310	-8.9	-0.7	-7	1550	-8.57	-0.77	-7	
2	26/05/2014	10:09	2WIAuto	THUR002	11216	1310	-9.31	-0.7	-7	1550	-8.59	-0.77	-7	
3	26/05/2014	10:09	2WIAuto	THUR003	11216	1310	-9.42	-0.7	-7	1550	-8.61	-0.77	-7	
4	26/05/2014	10:09	2WIAuto	THUR004	11216	1310	-8.91	-8.93	-7	1550	-8.63	-8.28	-7	
5	26/05/2014	10:09	2WIAuto	THUR005	11216	1310	-8.95	-8.85	-7	1550	-8.28	-8.34	-7	

Figure 87, Memory extract KI2600 via 'Save Csv'

Save csv output from KI Meter. SN: 11216	Time in 24h format. Wavelengths in nm. Optical Power values in dBm.															
Mem	**Date**	**Time**	**ID_Tag**	**RemSN**	**Length**	**Wl1**	**Pwr1**	**Ref1**	**Orl1**	**RemPwr1**	**RemRef1**	**RemOrl1**	**Wl2**	**Pwr2**	**Ref2**	**Orl2**
1				24919		1310	-0.34	-99.99	1.44	-99.99	-99.99	-99.99	1310	-0.43	-99.99	99.98
2				24919		1310	-0.1	-0.1					1550	-0.25	-0.25	
3				24919		1310	-0.09	-0.1					1550	-0.25	-0.25	
4				24919		1310	-8.33	-0.1					1550	-19.31	-0.25	
{xcheck: 00a1a199e0}																

Figure 88, Memory extract KI7343 via 'Save Csv'

Copyright

18. CUSTOMISATION

Being Excel based, KITS™ offers a number of modification options.

18.1 Renaming worksheets

This is as standard Windows function. A worksheet name can be changed to any other text accepted by Excel. KITS™ remembers the new sheet name when the workbook is saved.

18.2 Modifying the Live Data & Loss Testing worksheets

Many fields in the Live Data & Loss Testing worksheets can be modified. There are two options for performing this being:-

1. Modifying the Master Layout template or
2. Modifying an open or existing KITS™ workbook.

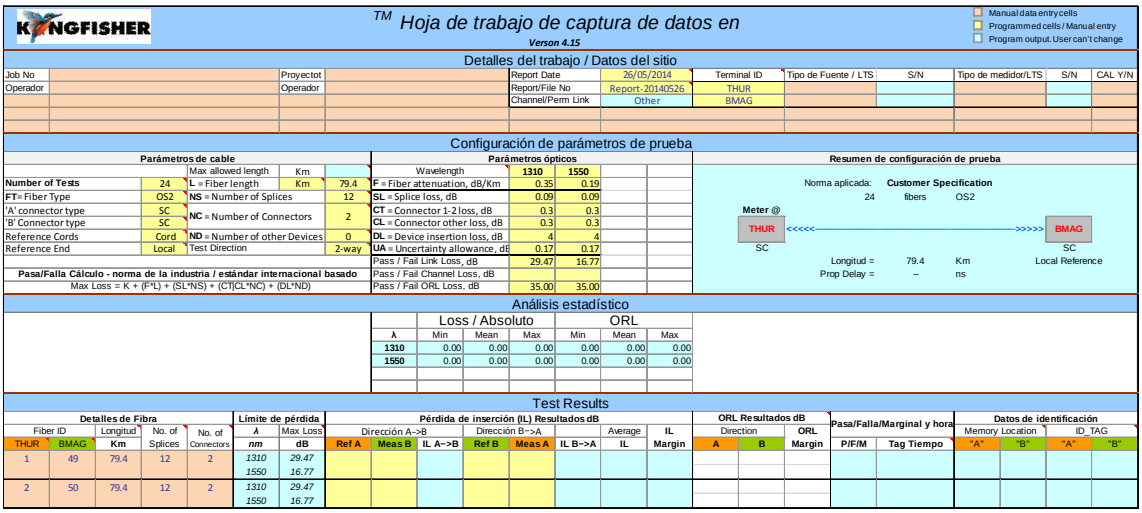


Figure 89, Customised worksheet - Spanish

Modifications to the Master Layout template will affect all new KITS™ workbooks. However it will be overridden should KITS™ be upgraded or reloaded at a later date.

The Master Layout template, KitsXls.xls is typically installed under ***<Drive>:\Documents and Settings\All Users\Application Data\Kingfisher\ KITS4.***

Modifying an existing or open KITS™ workbook, and saving it with a specific name, is preferred by many users as it permits them to create several customised worksheets.

- Once modified the changes should be protected. The two methods of protecting the changes are covered in Section **18.3** below.

18.2.1 Modification Rules

Live Data

The text in cells with a blank or dark blue background may be changed.

Loss Testing

The text in cells with a blank background may be changed.

Copyright

18.3 Protecting a worksheet design

This is very handy for working on assorted jobs, changing languages, terminology, and so on. Windows offers two methods for creating a protected worksheet. These are:-

1. Write Protecting a file or by
2. creation of a Template.

As these are standard Windows functions, instruction are not given within this manual.

18.4 Designing a Customised Report Sheet

From years of experience in customer support, it is recognised that a generic report sheet format can never satisfy different user needs. A new report generating function is provided in KITS™ that allows users to design their own report worksheet and automatically populate the test data to the custom designed report worksheet.

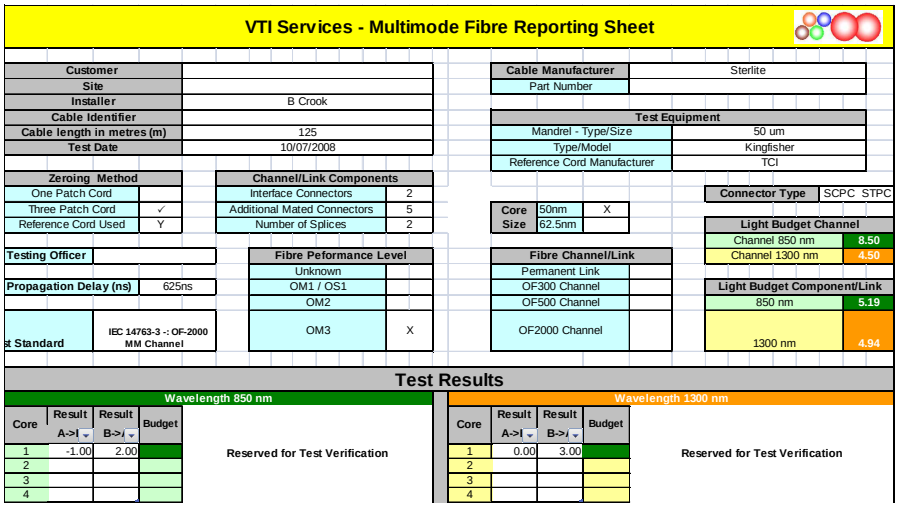
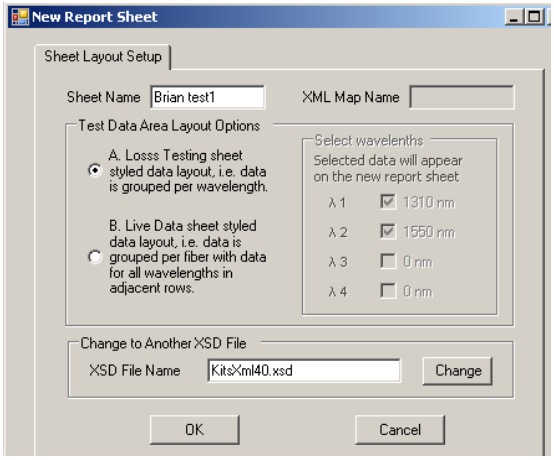
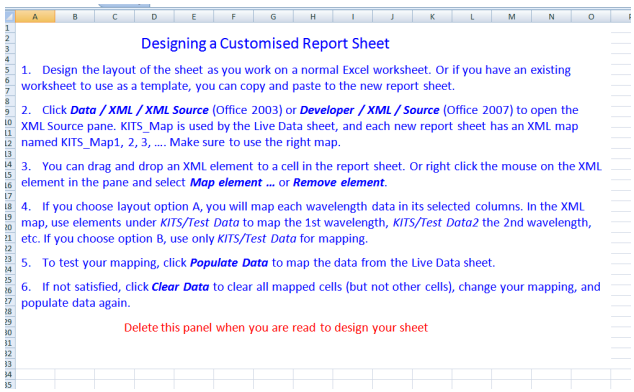


Figure 90, Customised Report layout

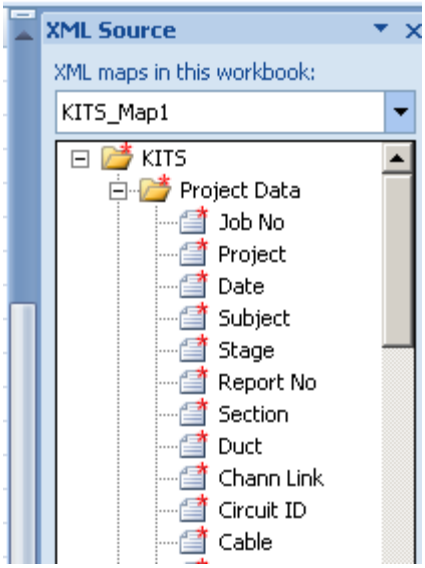
Step	Designing a Cutomised report sheet
1	It is suggested that the design of the new report sheet be performed or obtained before starting. Alternatively, you can design the layout of the sheet as you work.
2	Create a new or open a saved KITS™ workbook, set up all parameters for the Live Data sheet.
3	From the Kingfisher menu bar, click ***New Report***. A "New Report Sheet" form will pop up.

Figure 91, Create New Report

Copyright

Step	Designing a Cutomised report sheet
4	Enter in a sheet name.
5	Choose data layout option A or B • A is the layout of the Loss Testing sheet, where one Excel row has data for all wavelengths of one fiber. • B is the layout of the Live Data sheet, where one Excel row has data for one wavelength and data for one fiber is grouped in consecutive rows). For option B, you can tick check boxes to decide which wavelengths to include in the report. By default the new report worksheet uses the same XSD (XML Schema Definition) file as used by the Live Data sheet. You can customise this file and supply it to the new report.  **Figure 92, Choose data layout option** XML Map Name shows the name of the XML map for this sheet. It is empty before the sheet is created
6	Click ***Ok*** to complete. A new sheet is created which contains a picture frame with instructions to customise a report sheet.  **Figure 93, Picture frame – instructions** Read and delete this frame before you start designing the sheet (or copy it somewhere else, as you may need to refer to it later).
7	If you have an existing worksheet to use as a template, you can copy part or the whole sheet and paste it into the new report worksheet. Alternatively you can design the layout of the sheet as you work.

Copyright

Step	Designing a Cutomised report sheet
8	In KITS™, click the Excel menu item ***Data / XML / XML Source*** (Office 2003) or ***Developer / XML / Source*** (Office 2007) to open the XML Source pane.  **Figure 94, XML source pane** A dropdown list on the top of the pane shows the XML maps in the workbook. • KITS_Map is used by the Live Data sheet, • The new report sheet has an XML map named KITS_Map1. Any subsequent report sheets willbe named with the suffix 2, 3, etc. **Note:** You must use the correct XML map, otherwise the data cannot be populated correctly.
	The KITS_Map and subsequent XML maps, are divided into 13 sections, being:- Project Data, A Terminal, B Terminal, Cable Details, Pass Formula1, Pass Formula2, Pass Formula3, Pass Formula4, Stat Analysis, Test Data, Test Data2, Test Data3 and Test Data4.
9	You can drag and drop an XML element to a cell in the report sheet. Alternatively right click the mouse on the XML element in the pane and select ***Map element …*** or ***Remove element***.
10	**If you choose layout option A:** You will need to map each wavelength data in its selected column. • Use elements under **KITS/Test Data** to map the first wavelength, • Use elements under **KITS/Test Data2** to map the second wavelength, etc. **If you choose layout option B:** Use only **KITS/Test Data** for mapping.
11	To test your mapping, click ***[Populate Data]*** to map the data from the Live Data sheet.
12	If not satisfied, click ***Clear Data*** to clear all mapped cells (but not other cells), change your mapping, and then re-populate the data.

Copyright

18.4.1 XML Mapping Tips:

- A XML element can be mapped only once. If you do want a piece of data to appear in another cell, you can use an Excel formula to refer to the mapped cell.
- A XML element which maps with a blue background and a pull down arrow (

) is called a repeating element, which allows the element to appear any number of times. This is used to map an array of data. The first cell is for the title with the data mapped to the rows below. You can either use this title as the heading, rename it with your own heading or hide the title element.
- A repeating element, such as the fibre number cannot auto size. If you do want to change the number fibres , you can manually edit the new XML work book
- To remove a mapped repeating element, first do ***Remove element*** from the XML pane, then click on the mapped element (where the dropdown icon still appears), click Excel menu ***List / List / Convert to Range*** (Office 2003) or ***Design/Convert to Range*** (Office 2007) to convert the area to normal Excel range. After that, you can remap the element.
- To know which XML is mapped to the current report sheet, open the XML pane, click on a mapped cell, the pane will show the map with the element that is mapped to the cell selected. Alternatively, click the ***Setup*** button, the XML Map Name in the popup form shows the name of the map.
- If you map repeating elements to adjacent columns in the sheet you may receive an "XML map is not exportable" error when you try to export the XML data. Click ***Options*** in the XML pane, and deselect ***Automatically Merge Elements When Mapping***. Alternatively, depending upon your design, you can insert a column in between two XML mapped lists and set its width to 0 (this may affect other rows in the sheet).
- You can copy the XSD file KitsXml40.xsd (typically under *<Drive>:\Documents and Settings\All Users\Application Data\ Kingfisher\KITS4*) to another file, remove the elements in KITS/Test Data[234] that are not needed and rearrange the remaining elements so that KITS/Test Data[234] can be mapped to an XML list as a whole.
  Then, from within the customised KITS™ worksheet, run [***Setup]*** to change to the new XSD file name.

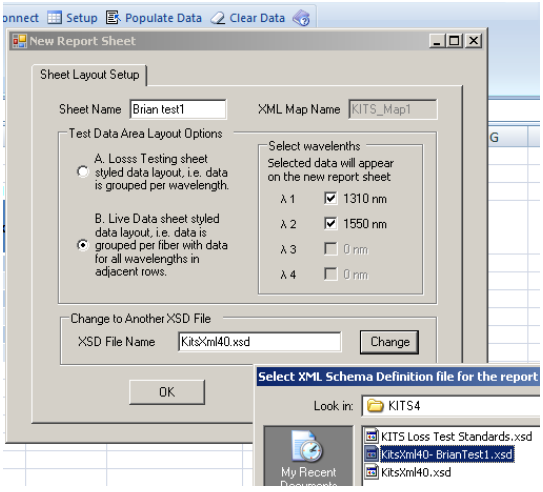


Figure 95, Customised XSD

Copyright

19. TECHNICAL TIPS

19.1 Running an additional KITS™ Workbooks

Due to the restriction in resource sharing, only one KITS™ workbook can run within one Excel application. To run additional KITS™ workbooks, you must start another Excel application (***Start / programs / Microsoft Office / Excel***), then open an existing or start a new KITS™ workbook.

The two KITS™ workbooks each run in their own workspace without interfering with another.

19.2 Opening an Old format KITS™ Workbook

If you have a workbook saved by an earlier release of KITS™, it may not work properly with the new release because of the changes made to the program as well as sheet layout.

If the old workbook does not open correctly in KITS™, open the workbook in Excel and see how much existing data is still available. You may still be able to retain some of the data.

In the worst case, you can create a new KITS™ workbook, enter the setup parameters following the settings of the old one, and manually copy the data you want to keep and paste it to the new KITS™ workbook. The special windows 'Clipboard' function, which permits copying and pasting of multiple items is ideal for this. **Figure 96** below shows its location in Office 2007.

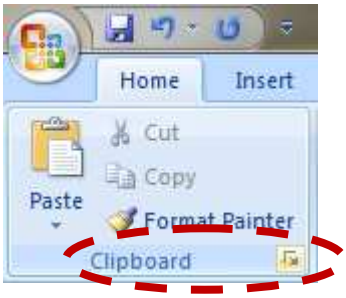


Figure 96, Clipboard function Office 2007

Note: This can only be done in 'Non Secure Mode'.

Copyright

APPENDIX A
SUPPORT

A comprehensive range of FAQs is available on our web site at:-
http://www.kingfisherfiber.com/Fiber-Optic-Test-Equipment/Kits-Software/FAQ/Index.htm
or via www.kingfisherfiber.com and select ***Support.***

For advanced technical support support, let us know:

- The KITS™ version and build date. This can be found located in KITS™, under Kingfisher / about KITS,
- Your instrument model number, firmware version and serial number.
  - KI7000 instrument firmware version is displayed during instrument start-up,
  - KI2000 series instruments require holding down [F4] during turn on
  - and the instrument serial number is usually on the rear label.
- Your Windows and Office versions, including any non-English language options.

If you have any suggestions for improvement to this document or to the software, please contact sales@kingfisher.com.au

A.1 Re-enabling the KITS™ Add-In

KITS™ runs as an Excel Add-In named KIAddin. Occasionally this Add-In may become disabled. When this happens, you can follow these steps to re-enable it.

Excel 2007

Step	Procedure
1	Click the ***Office*** button (the top left corner of Excel), then click ***Excel Options / Add-Ins***
2	If KIAddin is disabled, you can see it in the list "Disabled Application Add-Ins" (near the bottom)
3	In the drop down list (at the bottom), select ***Manage: Disabled Items / Go***
4	Select ***KIAddin /*** Click ***Enable / Close***
5	Back to the same drop down list, select ***Manage: COM Add-Ins / Go***
6	Select ***KIAddin / Ok***

Excel 2003 and earlier:

Step	Procedure
1	Click ***Help / about Microsoft Office Excel / Disabled Items***
2	Select KIAddin and then ***Enable***.

If KIAddin is not visible in the list of disabled items, you need to run "Add or Remove Programs" from Windows Control Panel to repair KITS™.

Copyright

APPENDIX B
RS232 / USB DRIVER CONFIGURATION & INSTALLATION

Early instruments used a RS232 interface, later instruments use an USB interface.

B.1 RS232

Prior to version 4.15, KITS™ required that Com port assignment be in the range of 1~4. Version 4.15 removed this restriction.

If a new RS232 lead is needed for a legacy instrument, the connection details are as follows.

	Wire 1	**Wire 2**	**Wire 3**
Instrument Jack Plug	Body (Gnd)	Ring (Tx)	Tip (Rx)
9 Pin D connector	Pin 5 (Gnd)	pin 2 (Rx)	Pin 3 (Tx)
25 pin D connector	Pin 7 (Gnd) **	Pin 3 (Rx) **	Pin 2 (Tx)

Table 1, RS232 pinout

Note 1: ** Some (out of spec) serial ports need a 10 K resistor in the D connector across wires 1 & 2.

Note 2: If your instrument has an RS232 interface and your computer does not, then you will need to install a suitable USB to RS232 adaptor/driver.

These can be purchased from most computer supply shops or from Kingfisher International as part number OPT188.

Note 3: with some versions of Windows the USB to RS232 driver is only installed on one USB port! In this situation, either note the correct USB port or also install the driver on the other USB ports.

B.2 USB Power

Some computers, particularly laptops, may be configured to shut off power to the USB port.

If KITS™ seems to hang for no reason this may be due to the power management settings.

KITS™ is a real-time data acquisition program, and computer power management settings may need to be modified or disabled.

B.3 Change Meter Port

Users normally do not need to consider the meter port as KITS™ finds the port automatically on connection. The sequence is that KITS™ searches an available USB port first, and then search for an RS232 port.

The Change Meter Port menu item is useful if multiple KITS™. applications are running in the same computer (e.g. in a laboratory situation). In this situation, the user may need to specify the COM port manually for a particular instance of KITS™.

Copyright

B.4 USB KI7000 series

The KI7000 series USB instruments use a HID interface that is built into Windows.

B.5 USB KI2000 series

Beginning with a KITS 4.15 build, the KI2000 device driver is installed along with the KITS software.

The default KI2000 device driver location is in a hidden directory. The exact location depends upon which version of the Windows operating system is being used:--

Either:-

c:\Documents and Settings\<User>\Application Data\Kingfisher\KI2000 Driver installer

or

c:\ProgramData\Kingfisher\KI2000 Driver installer.

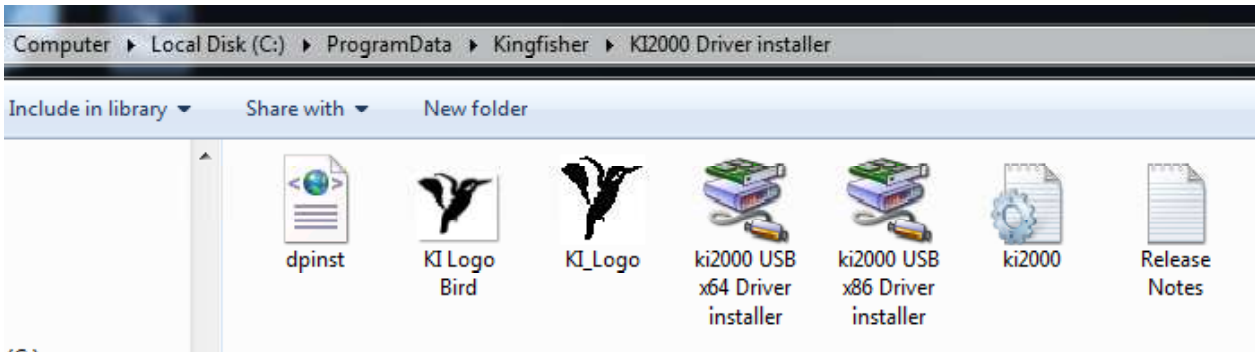


Figure 97, KI2000 USB drivers

If manual installation is required, you can run the .exe (x86 or x64) program located in this folder. X86 for 32 bit and x64 for 64 bit machines.

For other KITS file locations refer to Section 7.3.1

Copyright

APPENDIX C
USE OF INTERNATIONAL AND OTHER STANDARDS

KITS™ 4.10 introduced the option of Standards based testing. When selected, KITS™ automatically configures the workbook with a set of defined parameters for Pass/Fail assessment.

Four parameter based pass/fail options are provided:-

1. International Standard
2. Other Standard
3. Custom Specification
4. Simple Limit

Figure 98, Standard Selection

The Standards can be modified, deleted or added to. The default file location is:-
C:\Documents and Settings\All Users\Application Data\Kingfisher\KITS4

Note: any changes will be overridden, should a KITS™ update be applied or the program be re-installed.

C.1 International Standards

As installed, this workbook is preconfigured for ISO/IEC and TIA insertion loss Standards. The data is stored in the file **Int-LossTest-Standards.XLS**. The file is Write Protected to prevent accidental changes.

Note that the pass/fail parameters for the ISO/IEC standards involve a formula complexity not seen in the TIA standards.

Should other International Standards be required to be referenced, contact your nearest KI distributor or Kingfisher International directly.

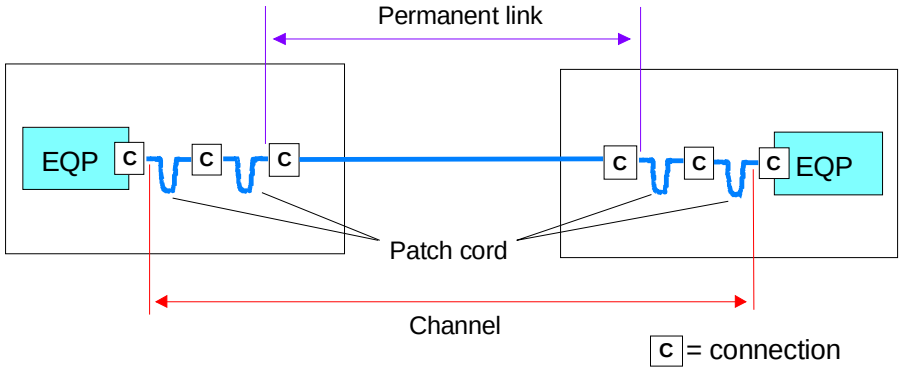


Figure 99, Channel & Permanent link in accordance with ISO 11801

Copyright

C.2 Other Standards

As installed, this workbook is preconfigured for 3 Telstra Corporation insertion loss standards and MIL-STD-2042. The data is stored in the file **User-LossTest-Standards.XLS.** This file is Write Protected to prevent accidental changes.

Version August 2013
User Defined Loss Test Standards

			Con Ends	Reference	RR	CL		SL		UA	length/prop		L					
No	Standard (protected)	Issue	Pass Fail Insertion Loss Average = A Worst Case = W	Allowed Reference Config.	Reference-Reference Loss	Reference against Random Connector 1-2 Loss dB	Embeded Connector Loss dB	Splice Loss dB	ORL	Uncertainty Allowance	Max Length m	Prop Delay nSim	λ1	λ1 Loss dB/km	Max Loss	λ2	λ2 Loss dB/km	Max Loss2
1	Telstra SMOF installed prior to Jan/06	9	A	1		0.5	0.5	0.1	50	0.3			1310	0.37		1550	0.22	
2	Telstra SMOF installed after Jan/06	9	A	1		0.3	0.3	0.1	50	0.3			1310	0.35		1550	0.21	
3	Telstra MMOF		A	1		0.75	0.75	0.1	20	0.3			850	3.2		1300	0.9	
4	MIL-STD-2042-6B SMF	5/07	A	1		0.75	0.75	0.2	30				1310	1.5		1550	1.5	
5	MIL-STD-2042-6B MMF	5/07	A	1		0.75	0.75	0.2					850	4.5		1300	2.0	
6	Location 06 (Spare)																	

Figure 100, User Loss Test Standard file

You can modify or add to the existing Other Standard list. The data field functions & requirements are:

Column A: No:

Numbers the standards. As installed, these are numbered 1 to 6. To provide for more than 6 standards, add additional numbering. e.g. 7

Column B: Standards (Protected) / User Definable.

Enter name of the standard or local specification here.

Column C: Issue Number

Enter version number of the standard or local specification here.

Column D: Pass/Fail Insertion Loss

This cell defines the way in which test results are assessed for a Pass/Fail condition. When testing to International Standards, this is usually assessed against the Worst Case single direction result. By comparison, many telcos assess their Pass/Fail criteria against the two-way average.

Enter an ‘A’ for two-way Average or a ‘W’ for Worst Case assessment.

Column E: Allowed Reference Configuration.

The number of test cords permitted to be used in establishing a reference condition may be defined.

E.g. for International Standards, only 1 or 3 lead referencing is permitted, whilst for NBN Co work 2 is specified.

Enter the allowed test cord referencing configurations, separated by a comma. Thus to permit all 3 configurations use 1, 2, 3. For 1 & 3 lead referencing only enter 1, 3.

Note: At time of this manual preparation, the IEC/ISO Internatiomal Standards bodies were preparing to introduce an ‘enhanced 3 cord reference method’.

His method involves validation of test cords as pert of the referencing procedure and is in effect a 1 test cord reference method.

Copyright

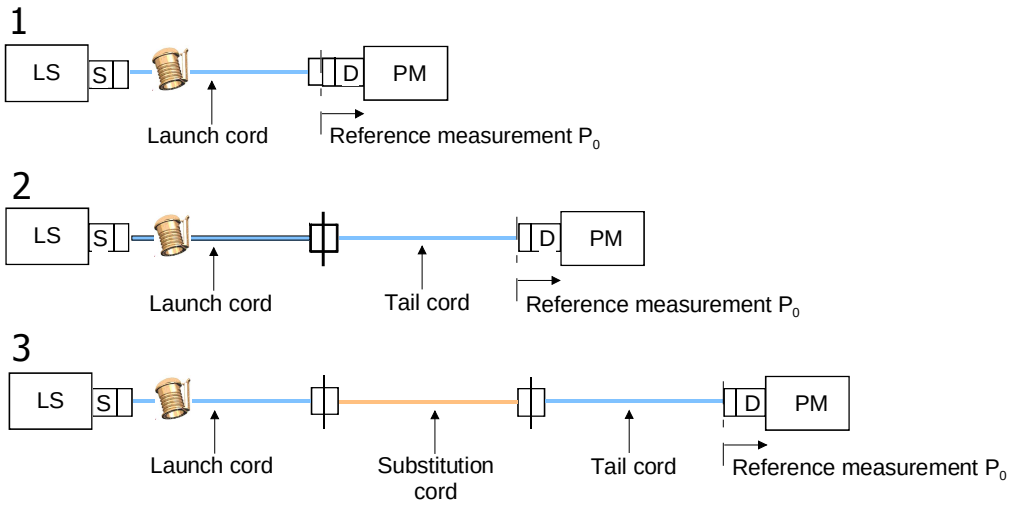


Figure 101, Traditional 1~3 test cord referencing configurations

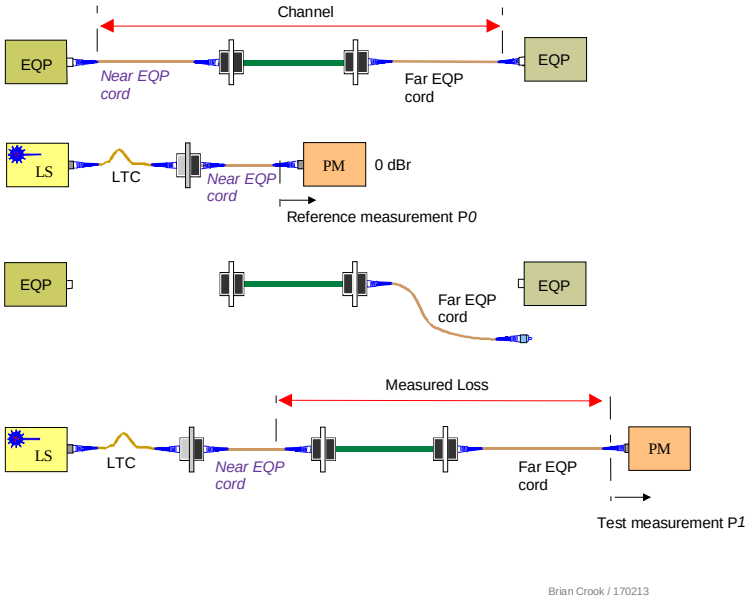


Figure 102, Enhanced 3 cord reference method (e3) for a Channel

Column F: Connector 1-2 Loss dB

Some standards mandate that the mated DUT to test cord connections shall have a lower maximum allowable loss to any other mated connectors that may be in the DUT /installed cabling.

Enter the Maximum Allowable loss in dB for the mated- end connectors here. (1 at each end of the DUT). You must also enter a value for any subsequent mated connectors under 'Connector other loss' as detailed below. Typically MMF= 0.1 dB and SMF = 0.2 dB.

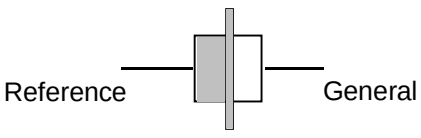


Figure 103, Standard symbol: Connection Reference against DUT

Copyright

Column G: Connector Other Loss dB

Enter the Maximum Allowable loss in dB for any subsequent mated connectors here. Typically 0.75 or 0.3 dB

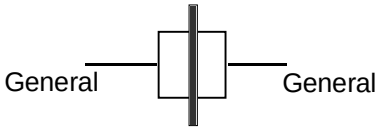


Figure 104, Standard symbol: Connection General against General

Column H: Splice Loss dB

Enter the Maximum Allowable splice loss in dB here. Typically 0.1 dB

Column I: ORL

Enter the Maximum Allowable ORL in dB here. The entered ORL value can be $^{+}$Ve or $^{-}$Ve; the software will automatically convert the number to absolute.

Column J: Uncertainty Allowance dB **

If required, enter the allowance for measurement uncertainty in dB.

Depending upon the KITS^{TM} build, the uncertainty value will be treated in one of two ways.

- **Early 4.15 Builds:** The uncertainty number is added to the calculated maximum link loss.
- **Later 4.15 builds:** Any insertion loss result falling within the specified uncertainty value of the calculated maximum link loss, will be reported in the Live Data Sheet as 'Marginal'. Refer to **10.3.1.1** for definitions of Pass, Marginal and Fail.

Common values for measurement uncertainty are in the range of 0 to 0.3 dB.

Measurement uncertainty is also affected by the referencing method.

Note: ** The terms measurement 'Uncertainty' 'Repeatability' and 'Reproducability' have different values as they are applicable to to differing measurement conditions. For simplicity, this document uses the term 'measurement uncertainty'.

Column K: Max Length m

Enter any maximum allowable length in metres.

Column L: Propagation Delay ns

If propogation delay (PD) is required to be reported, enter the required delay paramter in nano seconds/metre (ns/m), here.

The software will automatically calculate the propagation delay in ns..

PD = length m * (1000 *IOR) / C. Where IOR is the cables Index of Refraction and C is the speed of light.

For example: IOR = 1.469 => 4.90 ns/m, IOR = 1.490 => 4.97 ns/m.

For International Standards based testing use 5 ns.

Columns M-X: Wavelength parameters

Specifications in dB/Km or maximum loss for up to 4 wavelengths may be entered here.

Parameters are:

1. Wavelength, nm
2. Loss in dB/km, or
3. Maximum allowable loss dB

Copyright

APPENDIX D
LICENSE & WARRANTY

D.1 End-User-License Agreement for Kingfisher International software

IMPORTANT - READ CAREFULLY: This Kingfisher International End-User License Agreement ("EULA") is a legal agreement between you (either an individual or a single entity) and Kingfisher International for the Kingfisher software products, which include computer software and may include associated media, printed materials, and "online" or electronic documentation ("SOFTWARE PRODUCT"). By installing, copying, or otherwise using the SOFTWARE PRODUCT, you agree to be bound by the terms of this EULA. If you do not agree to the terms of this EULA, do not install or use the SOFTWARE PRODUCT; you may, however, return it to place of purchase for a full refund.

D.2 Software Product License

The SOFTWARE PRODUCT is protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The SOFTWARE PRODUCT is licensed, not sold.

D.2.1 GRANT OF LICENSE. This EULA grants you the following rights:

Applications Software. You may install and use one copy of the SOFTWARE PRODUCT, or any prior version for the same operating system, on a single computer. The primary user of the computer on which the SOFTWARE PRODUCT is installed may make a second copy for his or her exclusive use on a portable computer.

- Storage/Network Use. You may also store or install a copy of the SOFTWARE PRODUCT on a storage device, such as a network server, used only to install or run the SOFTWARE PRODUCT on your other computers over an internal network. However, you must acquire and dedicate a license for each separate computer on which SOFTWARE PRODUCT is installed or run from the storage device. A license for the SOFTWARE PRODUCT may not be shared or used concurrently on different computers.
- License Pack. If you have acquired this EULA in a Kingfisher License Pack, you may make the number of additional copies of the computer software portion of the SOFTWARE PRODUCT authorised on the printed copy of this EULA, and you may use each copy in the manner specified above. You are also entitled o make a corresponding number of secondary copies for portable computer use as specified above.

Copyright

D.2.2 DESCRIPTION OF OTHER RIGHTS AND LIMITATIONS

- Not for Resale Software. If the SOFTWARE PRODUCT is labelled "Not for Resale" or "NFR", then, notwithstanding other sections of this EULA, you may not resell, or otherwise transfer for value, the SOFTWARE PRODUCT.
- Limitations on Reverse Engineering, Decompilation, and Disassembly. You may not reverse engineer, decompile, or disassemble the SOFTWARE PRODUCT, except and only to the extent that such activity is expressly permitted by applicable law notwithstanding this limitation.
- Separation of Components. The SOFTWARE PRODUCT is licensed as a single product. Its component parts nay not be separated for use on more than one computer.
- Rental. You may not rent, lease, or lend the SOFTWARE PRODUCT.
- Support Services. KINGFISHER may provide you with support services to the SOFTWARE PRODUCT ("Support Service"). Use of Support Services is governed by the Kingfisher policies and programs described in the user manual, in "online" documentation, and/or in other Kingfisher-provided materials. Any supplemental software code provided to you as part of the Support Services shall be considered part of the SOFTWARE PRODUCT and subject to the terms and conditions of this EULA. With respect to technical information for product support and development. Kingfisher will not utilise such technical information in a form that personally identifies you.
- Software Transfer. You may permanently transfer all of your rights under this EULA, provided you retain no copies, you transfer all of the SOFTWARE PRODUCT (including all component parts, the media and printer materials, any upgrades, this EULA, and, if applicable, the Certificate of Authenticity), and the recipient agrees to the terms of this EULA. If the SOFTWARE PRODUCT is an upgrade, any transfer must include all prior versions of the SOFTWARE PRODUCT.
- Termination. Without prejudice to any other rights, Kingfisher may terminate this EULA of you fail to comply with the terms and conditions of this EULA. In such event, you must destroy all copies of the SOFTWARE PRODUCT and all of its component parts.

D.2.3 UPGRADES

If the SOFTWARE PRODUCT is labelled as an upgrade, you must be properly licensed to use a product identified by Kingfisher as being eligible for the upgrade in order to use the SOFTWARE PRODUCT. A SOFTWARE PRODUCT labelled as an upgrade replaces and/or supplements the product that formed the basis for your eligibility for the upgrade. You may use the resulting upgraded product only in accordance with the terms of this EULA. If the SOFTWARE PRODUCT is an upgrade of a component of a package of software programs that you licensed as a single product, the SOFTWARE PRODUCT may be used and transferred only as part of that single product package and may not be separated for use on more than one computer.

Copyright

D.2.4 COPYRIGHT

All title and copyrights in and to the SOFTWARE PRODUCT (including but not limited to any images, photographs, animations, video, audio, music, text, and "applets" incorporated into the SOFTWARE PRODUCT), the accompanying printed materials, and any copies of the SOFTWARE PRODUCT are owned by Kingfisher or its suppliers. The SOFTWARE PROUCT is protected by copyright laws and international treaty provisions. Therefore, you must treat the SOFTWARE PRODUCT like any other copyrighted material except that you may install the SOFTWARE PRODUCT on a single computer provided you keep the original solely for backup or archival purposes. You may not copy the printed materials accompanying the SOFTWARE PRODUCT.

D.2.5 DUAL-MEDIA SOFTWARE

You may receive the SOFTWARE PRODUCT in more than one medium. Regardless of the type or size of medium you receive, you may use only one medium that is appropriate for your single computer. You may not use or install the other medium on another computer. You may not loan, rent, lease, or otherwise transfer the other medium to another user, except as part of the permanent transfer (as provided above) of the SOFTWARE PRODUCT.

D.3 WARRANTY

LIMITED WARRANTY. Kingfisher warrants that (a) the SOFTWARE will preform substantially in accordance with the accompanying written materials for a period of ninety (90) days from the date of receipt, and (b) any Kingfisher hardware accompanying the SOFTWARE will be free from defects in materials and workmanship under normal use and service for a period of one (1) year from the date of receipt. Any implied warranties on the SOFTWARE and Kingfisher hardware are limited to ninety (90) days and one (1) year respectively. In states/jurisdictions which do not allow limitations on duration of an implied warranty, these limitation may not apply to you.

CUSTOMER REMEDIES. Kingfisher's entire liability and your exclusive remedy shall be, at Kingfisher’s option, either (a) return of the price paid, or (b) repair or replacement of the SOFTWARE or hardware that does not meet this Limited Warranty and which is returned to Kingfisher with a copy of your receipt. This Limited Warranty is void if failure of the SOFTWARE or hardware has resulted from accident, abuse, or misapplication. Any replacement SOFTWARE or hardware will be warranted for the remainder of the original warranty period or thirty (30) days, whichever is longer.

NO OTHER WARRANTIES. To the maximum extent permitted by applicable law, Kingfisher disclaim all other warranties, either express or implied, including, but not limited to implied warranties of merchantability and fitness for a particular purpose, with regard to the SOFTWARE, the accompanying written materials, and any accompanying hardware. This limited warranty gives you specific legal rights. You may have other which vary from state/jurisdiction to state/jurisdiction.

NO LIABILITY FOR CONSEQUENTAL DAMAGES. To the maximum extent permitted by applicable law, in no event shall Kingfisher be liable for any damages

Copyright

whatsoever (including without limitation, special, incidental, consequential, or direct damages for personal injury, loss of business profits, business interruption, loss of business information, or any other pecuniary loss) arising out of the use of or inability to use this product, even if Kingfisher has been advised of the possibility of such damages. In any case, Kingfisher's entire liability under any provision of this agreement shall be limited to the amount actually paid by you for the SOFTWARE and/or Kingfisher hardware. Because some states/jurisdictions do not allow the exclusion or limitation of liability for consequential or incidental damages, the above limitation may not apply to you.

If you acquired the SOFTWARE in the United States of America, this Software License Agreement and Warranty are governed by the laws of the State of Victoria, Australia. If you acquired the SOFTWARE outside Australia, local law may apply.

End of document.

Copyright